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URBAN RAINFALL-RUNOFF-QUALITY DATA BASE

by

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Contract No. 68-03-2663

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16. ABSTRACT

An earlier report provides the background, methods, catchment descriptions and statistical storm - event data, gathered by others, and assembled into a data base. This addendum provides catchment information for the following new locations:

City	No. Catchments	Quality Data
Burlington,ON	1	Yes
Chicago,IL	16	Yes
Denver, CO	6	3 with quality
Dade County,Fl	1	Yes
Toronto,ON	2	Yes

Additional information and data are also provided for three catchments in Broward County, Fl already described in the earlier report.

Also given are summary statistical tables (e.g., quality concentrations and loads) for the new locations listed above and all old ones. Event quantity summaries (e.g., rainfall and runoff depths and durations) are provided for all catchments as well. Both the raw data and the statistical summaries are contained on a magnetic tape available from the report authors.

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FOREWORD

The US Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. Noxious air, foul water, and spoiled land are tragic testimony to the deterioration of our natural environment. The complexity of that environment and the interplay between its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution and it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems for the prevention treatment, and management of wastewater and solid and hazardous waste pollution discharges from municipal and community sources, for the preservation and treatment of public drinking water supplies and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research, a most vital communications link between the researcher and the user community.

This report augments earlier documentation describing urban rainfall, runoff and quality data available from testing of urban hydrologic and water quality models and characterization of component processes. New quality data are included for five cities, and statistical analyses are presented for all cities in the data base.

Francis T. Mayo
Director
Municipal Environmental
Research Laboratory

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PREFACE

A common denominator of mathematical models of urban hydrologic processes is the need for adequate data with which to calibrate and verify model representations of physical processes. Such data need to be collected at short time intervals during several storms and are typically time consuming and expensive to obtain. However, the data also serve the very useful purposes of characterization of urban rainfall-runoff-quality processes in terms of statistics and loadings (e.g., pounds per acre) and extrapolation of such characteristics to ungaged catchments. It has been difficult in the past to obtain data for either modeling or characterization purposes.

This project was initiated on the assumption that many such data must exist; they need only be "found" in unpublicized deposits in widely scattered firms, universities and government agencies. The results of searching for these data indicate that there are indeed many potential sources, but the accessibility and documentation of most are deficient enough to render them difficult to use at best. However, the data for 47 catchments in 25 cities documented in this report represent an effort to aggregate available data into one accessible data base. The data base itself consists of a magnetic tape with data organized in a readily accessible format. Note that the emphasis has been upon assembling and processing of data rather than construction of a sophisticated computerized data storage and retrieval system. EPA's STORET system is now being used for the latter purpose.

The project has depended entirely upon the cooperation and good will of groups who have contributed their data. The University of Florida and EPA actively solicit new data from all sources in order to improve the data base described in this report. Holders of useful data are encouraged to contact UF directly. UF has also been designated as a recipient of data collected under EPA Section 208 studies; however, few 208 studies appear to have collected suitable data. The most promising new sources may be the EPA/USGS cooperative urban runoff monitoring studies presently being initiated. The overall goal is to build upon this initial effort in order to provide a large enough data base to allow selectivity in choice of model calibration-verification procedures and to provide statistically significant urban runoff characterizations.

ABSTRACT

Urban rainfall-runoff-quality data gathered by others have been assembled on a storm event basis for 48 catchments in the following 16 cities: San Francisco, CA; Broward County, FL; Lincoln, NB: Durham, NC; Windsor, ON; Lancaster, PA; Seattle, WA; Racine, WI; West Lafayette, IN; Greenfield, MA; Northampton, MA; Burlington, ON; Chicago, IL; Denver, CO; Date county, FL; and Toronto, ON. Rainfall-runoff data have been assembled for 25 more catchments in an additional 15 cities: Baltimore, MD; Chicago, IL; Champaign-Urbana, IL; Bucyrus, OH; Falls Church, VA; Los Angeles, CA; Portland, OR; Houston, TX; Salt Lake City, UT; and Denver, CO. The 25 cities contain data for a total of 73 catchments. Descriptions of the catchments, parameters and sampling procedures are provided in this report. Actual data have been placed on a magnetic tape and are also being placed on the EPA STORET data retrieval system. Both the raw data and statistical summaries are also available on magnetic tape from the authors.

This report also includes a statistical analysis of data from all catchments that include quality sampling. For each storm event (as defined by the sampling agency) the clock times, duration and volume of rainfall and runoff are given. For quality parameters, ranges, flow weighted means, standard deviations and loadings (i.e., pounds per acre-inch of runoff) are provided on an average basis across all events. The same statistics are available for individual storm events in the form of voluminous computer output.

This report is a reprint with additional material of the report:

> Huber, W.C. and J.P. Heaney, "Urban Rainfall-Runoff-Quality Data Base," EPA-600/8-77-009, (NTIS PB-270 065), Environmental Protection Agency, Cincinnati, OH, July 1977.

That report was submitted in partial fulfillment of Contract No. 68-03-0496 by the University of Florida under sponsorship of the U.S. Environmental Protection Agency. It covered the period June 1, 1974 to April 30, 1977, and work was completed as of April 30, 1977.

This addended report was also submitted in partial fulfillment of EPA Contract No. 68-03-0496 and No. 68-03-2663 and covers the period May 1, 1977 to December 31, 1979. Work was completed as of September 30, 1980.

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ABBREVIATIONS

APWA	American Public Works Association
ARS	Agricultural Research Service
ASCE	American Society of Civil Engineers
COA	Canada - Ontario Agreement
Colif	Coliforms
DWF	Dry Weather Flow
ENDEX	Environmental Data Index (data retrieval system of NOAA)
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FWPCA	Federal Water Pollution Control Administration
FWQA	Federal Water Quality Administration
GPO	Government Printing Office (Washington, D.C. 20402)
HEC	Hydrologic Engineering Center of the Corps of Engineers
HSP	Hydrocomp Simulation Program
Hwy	Highway
IASH	International Association for Scientific Hydrology
IHD	International Hydrological Decade
ILLUDAS	Illinois Urban Drainage Area Simulator
Ind	Industrial
JWPCF	Journal of the Water Pollution Control Federation
METRO	Municipality of Metropolitan Seattle
NAWDEX	National Water Data Exchange (data retrieval system of the USGS)

ABBREVIATIONS (concluded)

NERC	National Environmental Research Center
NOAA	National Oceanic and Atmospheric Administration
NSF	National Science Foundation
NTIS	National Technical Information Service (5285 Port Royal Rd., Springfield, Virginia 22161)
NWS	National Weather Service
OASIS	Oceanic and Atmospheric Scientifc Information System (data retrieval system of NOAA)
OWRT	Office of Water Resources Technology
PHS	Public Health Service
Res	Residential
RRL	Road Research Laboratory of Great Britain
Set	Settleable
Sol	Soluble
STORET	Storage and Retrieval (data retrieval system of the EPA)
STORM	Storage, Treatment, Overflow, Runoff Model
Susp	Suspended
SWMM	Storm Water Management Model
Tot	Total
UF	University of Florida
US	United States
USGS	United States Geological Survey
WATSTORE	Water Data Information and Retrieval System (data retrieval system of the USGS)
WMO	World Meteorological Organization

ACKNOWLEDGMENTS

Considerable interest, encouragement and useful advice was received from EPA colleagues. The efforts of Richard Field, Harry Torno, Chi-Yuan Fan, Douglas Ammon, and Richard Traver are gratefully acknowledged.

More so than most projects this one depended upon the cooperation and good will of many contributors of data. The project could not have been performed without them. At the risk of omission, individuals associated with different locations are recognized below: Broward County - Harold C. Mattraw, Jr ., USGS, Water Resources Division, Miami; Seattle - John M. Buffo and Glen D. Farris, Metro, Seattle; Lincoln - Dewey R. Anderson, Department of Civil Engineering, University of Nebraska, Lincoln and Robert Sallach, Heningson, Durham and Richardson, Inc., Omaha; Racine - Tom Meinholz and Dick Race, Envirex, Milwaukee; Lancaster - Arthur E. Morris and Warren Farmer, Dept. of Public Works, City of Lancaster; Windsor - James P. Hartt, Dept. of Civil Engineering, University of Windsor, Windsor; San Francisco - Harold C. Coffee, Jr., Dept. of Public Works, City and County of San Francisco; Champaign-Urbana, Philadelphia, Bucyrus, Falls Church, Winston-Salem, Jackson, Wichita, Westbury - Michael L. Terstriep, Illinois Sate Water Survey, Urbana; Los Angeles - Donald C. Tillman, City Engineer, and Aaron Aarons, Bureau of Engineering, Department of Public Works, City of Los Angeles; Portland - David G. Lorenzen, Dept. of Public Works, City of Portland and Allen L. Davis, CH2M-Hill, Corvallis; Houston - Steven L. Johnson (now with USGS, WRD, Miami) and Robert E. Smith, USGS, Water Resources Division, Houston; Greenfield and Northampton - Thomas K. Jewell, Department of Civil Engineering, University of Massachusetts, Amherst, MA (now with Department of Civil Engineering, Union College, Schenectady, NY); Salt Lake City - Joel E. Fletcher, Utah Water Research Laboratory, Utah State University, Logan; West Lafayette - Felix T. R. McElroy III, School of Civil Engineering , Purdue University, West Lafayette, IN. Additional information about catchments described in the first report is acknowledged from: Broward County - Harold C. Mattraw, Jr., USGS, Water Resources Division, Tallahassee, FL, Robert A. Miller, USGS, WRD, Orlando, FL, Marshall E. Jennings, USGS, Bay St. Louis, MS; Bucyrus - Larry D. Culler, Burgess and Niple Ltd., Columbus, OH.

At the University of Florida, several staff members made important contributions. Coding, retrieval and transferal of the data were supervised by W. Alan Peltz. Data reduction, cross checking and figure preparation were performed by William C. Taylor. Much of the original data reduction was organized by Harry L. Crotzer. The first structure of the data base was devised by Amuri A. Arroyo. Dedicated typing was performed by Grace Provenza and Linda Trawick. New figures were drafted by Anthony Dana. Computations were performed at the Northeast Regional Data Center at the University of Florida. Dr. Russell G. Mein, on leave from Monash University, Australia, reviewed and revised the reduction of quantity data for Lancaster, PA.

SECTION I

SUMMARY AND CONCLUSIONS

OBJECTIVES AND SCOPE

Since 1974 the University of Florida has been engaged in aggregation of urban rainfall-runoff-quality data collected by others. These data are intended for urban runoff model calibration and verification, characterization of urban runoff on a nationwide basis, and synthesis of data for new locations. Broadly, objectives have been to:

1. identify sources of data,
2. acquire available data,
3. process and computerize the data,
4. disseminate data and ancillary material, and
5. perform statistical analyses on the data.

This report was first published in 1977 as:

Huber, W.C. and Heaney, J.P., "Urban Rainfall-Runoff-Quality Data Base," EPA-600/8-77-009, (NTIS PB-270 065), Environmental Protection Agency , Cincinnati, OH, July 1977.

This present edition reprints the material that was first published along with information on six new catchments and statistical analyses for 25 catchments with quality data.

The page numbering system has been altered such that each section is numbered as 6-1, 6-2, etc. Thus, as new data locations are processed in the future, their documentation may be added to the end of appropriate sections. Project work continues under EPA contract no. 68-03-2663. The University of Florida actively solicits new data in care of the authors of this report.

DATA SUMMARY

Locations for which data have been assembled and placed on a magnetic tape are shown in Table I-1 and Figure I-1. Rainfall, runoff and quality data are available for eleven locations while the remaining number have only rainfall runoff data at present. Data are provided on a storm event basis; no long-term (continuous) records are presently included. Receiving water data are also not included.

Many of these sources may be updated using data collected more recently or using data presently being collected under various programs, such as EPA 208 and National Urban Runoff Program projects and EPA/USGS cooperative urban runoff monitoring projects. As noted in Section V, a large volume of urban runoff data already exists, much of which may be included in the data base at a future date.

The project results are provided in three forms:

1. The final report (this volume), which includes descriptions and references of data sources utilized and pending.
2. A magnetic tape containing the actual rainfall-runoff-quality data from each source on a storm event basis. Copies of the tape will be provided at cost. In addition, all data are being placed on the EPA STORET data retrieval system for more general accessibility.
3. A limited amount of in-house modeling data (maps, plans, photos, etc.) at UF, available for short-term loan.

STATISTICAL ANALYSES

Data for all catchments subject to water quality monitoring have been analyzed statistically for flow and time weighted means and standard deviations as well as ranges of parameters and surface loadings (i.e., pounds of pollutant per acre-inch of runoff). Summary values for each catchment and pollutant are given for each statistical parameter. In addition, hydrologic information such as rainfall and runoff depth and duration is given for each storm event. Statistical analyses of the quality parameters for each individual storm event for each catchment are voluminous and available upon request to the authors of this report.

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Table I-1. Summary of Data

Location	Catchment	ID Code	Area (ac)	Area (ha)	Drainage System	No. Storms with Quantity	No. Storms with Quality
San Francisco, CA	Baker St.	CA0101	168	(68)	C	3	3
	Mariposa St.	CA0102	223	(90)	C	3	3
	Brotherhood Way	CA0103	180	(73)	C	3	3
	Vicente St., N.	CA0104	16	(6.5)	S	1	1
	Vicente St., S.	CA0105	21	(8.5)	S	1	1
	Selby St.	CA0106	3400	(1376)	C	8	8
	Laguna St.	CA0107	375	(152)	C	2	2
Los Angeles, CA	Echo Park	CA0201	252	(102)	S	18	0
Denver, CO	Big Dry Creek Trib., Littleton	CO0101	606	(245)	S	6	4
	North Ave., Denver Fed. Center, Lakewood	CO0102	76.7	(31)	S	5	2
	36th St.	CO0103	2446	(990)	S	7	1
	South Platte Trib. No. 2, Northglenn	CO0104	307	(124)	S	5	0
	Harvard Gulch	CO0105	2956	(1196)	S	4	0
	Concourse D Drain, Stapleton Airport	CO0106	73	(29.5)	S	2	0
Broward County, FL	Residential	FL0101	47.5	(19.2)	S	74	74
	Commercial	FL0102	39.0	(15.8)	S	108	108
	Transportation	FL0103	28.4	(11.5)	S	113	113
Miami, Dade County, FL	Multi-Family Residential	FL0201	14.7	(6.0)	S	43	43

Table I-1. Summary of Data

Location	Catchment	ID Code	Area (ac)	Area (ha)	Drainage System	No. Storms with Quantity	No. Storms with Quality
Chicago, IL	Oakdale	IL0101	12.9	(5.2)	C	20	0
	Ravine Drive, Highland Park	IL0102	313.9	(127.0)	S	3	3
	Woodfield, Rolling Meadows	IL0103	345.6	(139.9)	S	6	6
	Centex, Elk Grove Village	I10104	236.8	(95.8)	S	6	6
	Seymour Ave., Mundelein	IL0105	1139.2	(461)	S	8	8
	Glen Ellyn Rd., Glendale Heights	IL0106	992.0	(401.5)	S	8	8
	Addison Ave., Elmhurst	IL0107	601.6	(243.5)	S	7	7
	Springingsguth Rd., Schaumburg	IL0108	1491.2	(603.5)	S	4	4
	Park Forest South	IL0109	160.0	(64.7)	S	5	5
	Winston Village, Bolingbrook	IL0110	89.6	(36.3)	S	2	2
	State Highway 83, Clarendon Hills, Flagg Creek	IL0111	972.8	(393.7)	S	4	4
	Perry Road	IL0112	4435.2	(1794.9)	S	5	5
	Beecher-Peotone Road	IL0113	2617.6	(1059.3)	S	4	4
	Olcott Road	IL0114	3456.0	(1398.6)	S	2	2

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EPA-287 (Cin.)
(4-76)

Table I-1. Summary of Data

Location	Catchment	ID Code	Area (ac)	Area (ha)	Drainage System	No. Storms with Quantity	No. Storms with Quality
	Pioneer Woods, Palos Park	IL0115	2304.0	(932.4)	S	1	1
	Alden Road	IL0116	4000.0	(1618.7)	S	1	1
	Hawthorn Center, Vernon Hills	IL0117	96.0	(38.8)	S	3	3
Champaign-Urbana, IL	Boneyard Creek	IL0201	2290	(927)	S	27	0
West Lafayette, IN	Ross-Ade (Upper)	IN0101	29	(11.7)	S	10	10
Wichita, KS	Dry Creek	KS0101	1883	(762)	S	8	0
Baltimore, MD	Gray Haven	MD0101	47.4	(19.2)	S	24	0
	Northwood	MD0102	23.3	(9.4)	S	12	0
Greenfield, MA	Maple Brook	MA0101	1014	(410)	S	5	5
Northampton, MA	Market St. Brook	MA0201	380	(154)	S	6	6
Jackson, MS	Crane Creek	MS0101	285	(115)	S	17	0
Lincoln, NB	39th and Holdrege	NB0101	79	(32)	S	18	18
	63th and Holdrege	NB0102	85	(34)	S	14	15
	78th and A	NB0103	357	(144.5)	S	10	11
Westbury, NY	Woodoak Dr.	NY0101	14.7	(6.0)	S	9	0
Winston-Salem, NC	Tar Branch	NC0101	384	(155.5)	S	17	0
Durham, NC	Third Fork	NC0201	1069	(432.6)	S	19	4
Bucyrus, OH	Sewer Dist. 8	OH0101	179	(72.5)	C	10	0
Windsor, ON	Labadie Rd.	ON0101	29.5	(11.9)	S	21	21
Burlington, ON	Malvern	ON0201	57.6	(23.30)	S	29	5

EPA-287 (Cin.)
(4-76)

Table I-1. Summary of Data

Location	Catchment	ID Code	Area (ac)	Area (ha)	Drainge System	No. Storms with Quantity	No. Storms with Quality
Toronto, ON	Urban, East York	ON0301	383.0	(155.0)	C	22	22
	Brucewood, North York	ON0302	48.23	(19.52)	S	28	8
Portland, OR	Eastmoreland	OR0101	75	(30)	C	28	0
Lancaster, PA	Stevens Ave.	PA0101	134	(54)	C	6	6
Philadelphia, PA	Wingohocking	PA0201	5326	(2155)	C	16	0
Houston, TX	Hunting Bayou (Cavalcade St.)	TX0101	768	(311)	S	8	0
	Hunting Bayou (Falls St.)	TX0102	2509	(1015)	S	11	0
	Bering Ditch	TX0103	1894	(766.5)	S	10	0
	Berry Creek	TX0104	3110	(1258.6)	S	10	0
Salt Lake City, UT	Layton	UT0101	1.35	(0.55)	S	18	0
	Parleys Canyon I	UT0102	0.54	(0.22)	S	27	0
	Parleys Canyon II	UT0103	0.55	(0.22)	S	23	0
Falls Church, VA	Tripps Run	VA0101	332	(134)	S	7	0
Seattle, WA	View Ridge I	WA0101	630	(255)	S	30	30
	View Ridge II	WA0102	105	(42.5)	S	5	5
	South Seattle	WA0103	27.5	(11.1)	S	29	29
	South Center	WA0104	24	(10)	S	29	29
	Lake Hills	WA0105	150	(61)	S	7	7
	Highlands	WA0106	85	(34.5)	S	4	4

Table I-1. Summary of Data

Location	Catchment	ID Code	Area (ac)	Area (ha)	Drainage System	No. Storms with Quantity	No. Storms with Quality
Seattle, WA	Cent. Bus. Dist.	WA0107	27.8	(11.3)	C	5	5
Racine, WI	Site I	WI0101	829	(335.5)	C	9	9

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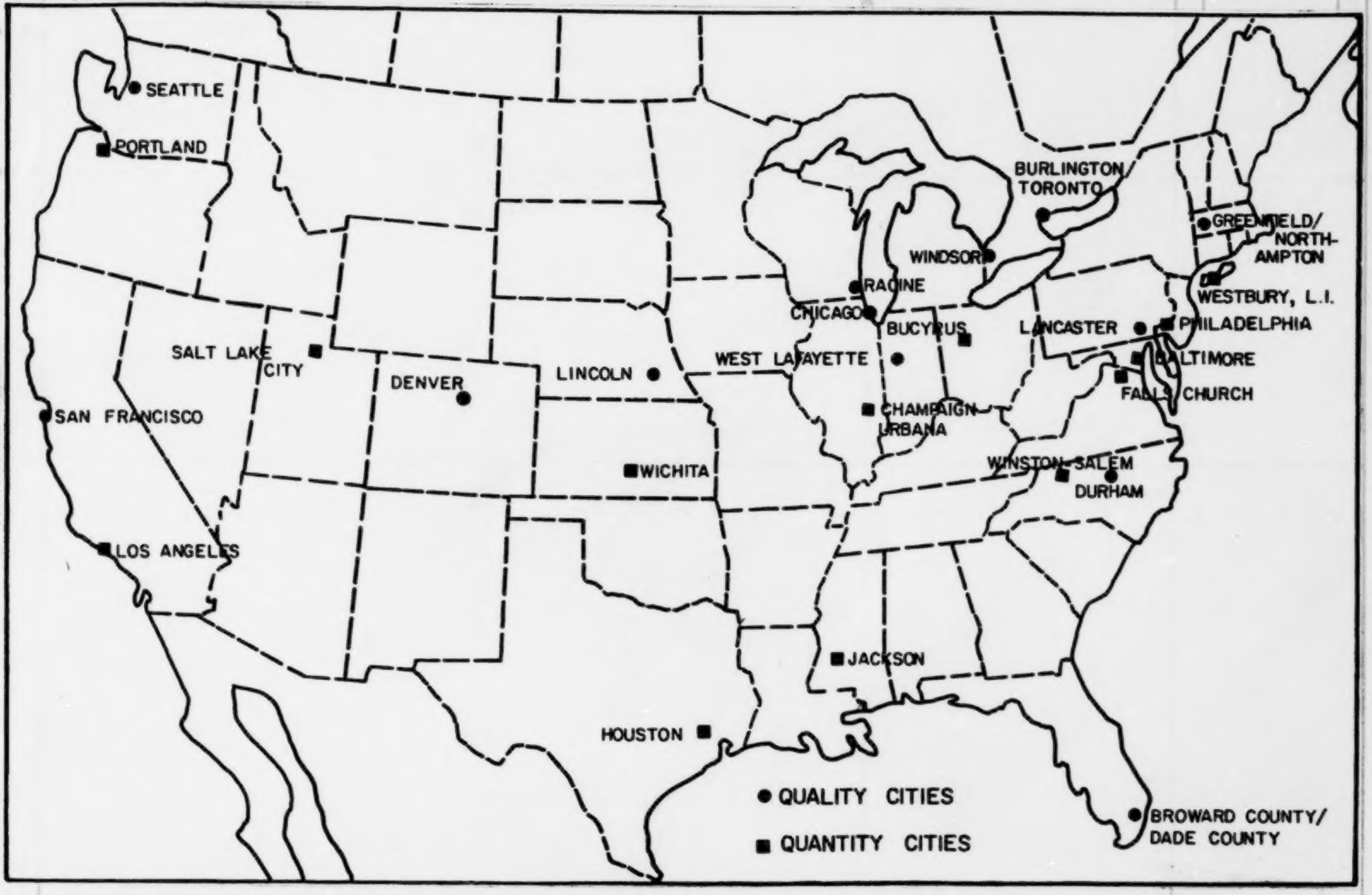

Figure I-1. Location map for cities with rainfall-runoff-quality data (quality cities) and rainfall-runoff data (quantity cities)

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PAGE NUMBER

SECTION II

RECOMMENDATIONS

1. Rainfall, runoff and quality data are needed for model development, urban runoff characterization, data synthesis and other purposes. Hence, potential data sources should be cultivated and added to the present data base. The University of Florida (in care of the authors of this report) and EPA actively solicit all such data.

2. Confusion exists frequently as to the exact water quality parameter being reported--sampling method, type of sample (e.g., total or dissolved, fixed or volatile), laboratory procedure and units. Future providers of data should carefully document each of these items. Assignment of an EPA STORET code to the parameter provides a relatively unambiguous description.

3. Elementary statistical analyses should continue to be applied to the extant data to develop loadings and to provide characterization information. Eventually, these results can be coupled with hydrologic, physical and demographic information to determine causative relationships.

4. No long term, continuous, urban rainfall-runoff-quality data are known to exist. Such data are needed to verify planning-level analyses of urban areas and should be collected.

5. Receiving water sampling should be performed concurrently with runoff sampling in order to assess the impact of urban runoff on receiving water quality.

SECTION III

INTRODUCTION AND OBJECTIVES

In an effort to provide useful planning tools for abatement of quantity and quality problems caused by urban stormwater runoff, many mathematical models have been developed to simulate the various components of urban hydrological processes (1,2). These models range from very simple, to very sophisticated, yet all share a common need--adequate data for development, calibration and verification. Specifically, these data consist of detailed measurements of rainfall, runoff and quality parameters taken at frequent intervals during storms, such that the full dynamic and spatially variable nature of the urban runoff may be studied. Since most recent urban hydrologic models define the complete hydrograph or pollutograph during a storm event, measurement of only, say, peak flows or average concentrations is inadequate for calibration of these models. Such models are being used in ever increasing applications and the need for relevant data has intensified.

Another important data requirement arises from the need to characterize urban runoff in a variety of ways. Examples of such needs are:

1) determination of rainfall and runoff volumes, intensities, peaks, durations, interevent times and associated statistics;

2) identification of quality parameters found in urban runoff;

3) determination of ranges, arithmetic and flow-weighted means, medians, variances, and other statistics of quality parameters;

4) computation of total mass emissions of quality parameters;

5) computation of quality "loadings" such as pounds per acre, pounds per curb-mile, pounds per inch of rainfall, pounds per day, etc. and combinations, and;

6) evaluation of causative relationships among rainfall, runoff, quality, demographic and abatement factors.

Several of the above needs require collection of both runoff and quality data; e.g., calculation of total pollutant loads, flow-weighted averages, etc. requires simultaneous measurement of flows and concentrations. Thus, concentration data by themselves are insufficient for many required analyses. Characterization results may then be used to synthesize data at unmonitored locations.

Data collected for characterization purposes are not always compatible with modeling needs since infrequent sampling times and/or omission of key parameters are likely. However, data suitable for model usage are usually also well suited for characterization purposes provided enough of a sample exists. It is desirable that characterization data be representative of an entire year or season and thus result from samplings of many storms since one group of data may be used for model calibration while the remaining group may be used for verification.

This project has obtained data, collected by others, to fulfill the modeling needs as first priority with attention also to the characterization needs. As described subsequently, there have been a surprisingly large number of studies devoted to collection of data useful for modeling, although collection of good quality data is more difficult and lags the quantity data by a considerable degree. The overall objective of this research, then, has been to find these data and publish them.

Specific objectives are, broadly:

1. identify sources of data,
2. establish criteria for collection of data,
3. acquire available data,
4. construct initial data base,
5. define how continuing maintenance of the data base is to be accomplished,
6. define how data dissemination should be done, and
7. perform elementary statistical analyses on the data.

These items are addressed individually and collectively in this report. Viable, current data sources are described within the report, and the actual data from these sources have been placed for easy access on magnetic tapes. The data are also being placed on the EPA STORET system for more general access.

The data collection and evaluation process is a continuous one, especially in light of current EPA Section 201 and 208 projects. Hence, the data sources described herein may be considered as an initial effort only. Data are continually being acquired as part of the project, and addenda with new data from new or the same sources will be issued periodically. To underscore this point, it should be noted that it is the responsibility of the University of Florida to review data received from 208 agencies and incorporate them into the data base where possible. Under the auspices of the Areawide Waste Management Group within EPA, 208 agencies and others are thus encouraged to provide UF with relevant data as they become available (in care of the authors of this report).

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SECTION IV

CRITERIA FOR DATA COLLECTION

INTRODUCTION

It is easy to be overwhelmed by the sheer magnitude of urban hydrologic and water quality data presently available. Hence, consideration must be given to the methods by which such data were collected prior to inclusion of them in a data base. On the whole, data collected directly by federal agencies (e.g., National Weather Service, U.S. Geological Survey) are gathered under standardized, documented procedures. However, the techniques used by almost all other agencies exhibit extreme variations. For instance, rainfall data may be collected using everything from a tipping bucket rain gage to a graduated cylinder read periodically. Such variations in sampling procedures may still be acceptable if they are at least documented; however, many project reports are lacking in this aspect. Since standardized procedures do exist for many phases of urban hydrologic sampling, these will be reviewed briefly, along with special considerations for different parameters.

PRECIPITATION DATA

Measurement of most meterological data is quite standardized. Publications of the National Weather Service (3) and others (4,5) describe instruments and techniques for measurement of rainfall and other pertinent variables. Accurate sampling of the time history of snowfall is seldom required; rather, the time history of snow melt is the record of concern. Hence, only measurement of rainfall is addressed here.

Most urban hydrologic models require rainfall inputs (usually intensities) at frequent time intervals (typically five minutes or less), with the required time interval decreasing as the response time of the catchment decreases, e.g., models of steep, small, impervious catchments require more frequent rainfall inputs than for flat, large, pervious ones. Eagleson and Shack (6) relate required sampling frequency to catchment and storm properties. However, some models require only hourly rainfall totals (7,8), available already tabulated from the National Weather Service for all first-order meteorological stations in the U.S. It is apparent that less frequent data can always be generated from averages of data taken at short time intervals.

Perhaps the best rain gages for this purpose are of the tipping bucket variety, in which the time of occurence of every 0.01 in. (0.25mm) of rainfall is recorded. However, by far the most common gage is the standard weighing-bucket gage used at most National Weather Service (NWS) installations. When a 24 hour chart is used on these gages, it is difficult to interpolate the chart at less than 15-minute intervals. Hence, this is often an unfortunate constraint on the temporal accuracy of rainfall data.

In the event that gages being used for modeling are only operated intermittently, antecedent conditions for rainfall may sometimes be evaluated using the nearest NWS gage, since these data are published regularly (9). The applicability of "nearby" data will depend heavily on the spatial distribution of rainfall, discussed below.

The spatial extent of the gaging network is the other critical factor. It is important, though not always essential, that at least one gage be located within the catchment under consideration. This requirement becomes more binding as the size of the catchment and the likelihood of convective rainfall (e.g., thunderstorms) increases. When, as is all too often the case, there are no gages within a catchment that may otherwise have good flow and quality measurements, the recourse is to interpolate as best as possible from nearby gages. If the rainfall is uniform in time and space (as is sometimes the case for storms of cyclonic origin), such data may adequately serve modeling needs. Quantitative methods are available for determination of the number of gages required as a function of catchment and storm characteristics (10, 11).

Point rainfall from a single gage may be converted to a spatial average using standard NWS curves (e.g., reference 5, p. 359) or more recent methods (12). Multiple-gage data averaged by the Thiessen or other techniques may create special problems, because high frequency time variations are frequently lost when station records are combined. If possible, it is preferable to input data from separate gages in a discrete manner into a model, i.e., formulate a model that is distributed enough to accept multiple rainfall inputs. Another alternative, if high frequency time variations are to be retained, is to use only one "most representative" gage for model input. In practice, the question of averaging or choice of gages is usually academic, however, since it is rare that data from more than one gage are available!

RUNOFF DATA

Quantity (runoff) measurements in urban areas are frequently difficult to perform because of a lack of an adequate hydraulic control along sewer outfalls. Almost all basic data consist of stages measured at some location, from which flows are derived, either by 1) calibration (by means of associated velocity measurements), or 2) known stage-discharge relationship (e.g., at a weir, flume or orifice constriction), or 3) theoretical stage-discharge relationship (e.g., application of Manning's equation to depth measurements in a conduit). The last of the three methods is the most common and least accurate. However, from a record of stages, users can sometimes compute their own flows, given other data on geometry and roughness. In addition, models are occasionally programmed to print out depths as well as flows, although this is uncommon. (Most data included in this report were taken by methods 1 and 2 above.)

Standardized procedures for flow measurements have been published by federal agencies (13), notably the U.S. Geological Survey (USGS) in various interpolate the chart at less than 15-minute intervals. Hence, this is often an unfortunate constraint on the temporal accuracy of rainfall data.

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Point rainfall from a single gage may be converted to a spatial average using standard NWS curves (e.g., reference 5, p. 359) or more recent methods (12). Multiple-gage data averaged by the Thiessen or other techniques may create special problems, because high frequency time variations are frequently lost when station records are combined. If possible, it is preferable to input data from separate gages in a discrete manner into a model, i.e., formulate a model that is distributed enough to accept multiple rainfall inputs. Another alternative, if high frequency time variations are to be retained, is to use only one "most representative" gage for model input. In practice, the question of averaging or choice of gages is usually academic, however, since it is rare that data from more than one gage are available!

RUNOFF DATA

Quantity (runoff) measurements in urban areas are frequently difficult to perform because of a lack of an adequate hydraulic control along sewer outfalls. Almost all basic data consist of stages measured at some location, from which flows are derived, either by 1) calibration (by means of associated velocity measurements), or 2) known stage-discharge relationship (e.g., at a weir, flume or orifice constriction), or 3) theoretical stage-discharge relationship (e.g., application of Manning's equation to depth measurements in a conduit). The last of the three methods is the most common and least accurate. However, from a record of stages, users can sometimes compute their own flows, given other data on geometry and roughness. In addition, models are occasionally programmed to print out depths as well as flows, although this is uncommon. (Most data included in this report were taken by methods 1 and 2 above.)

Standardized procedures for flow measurements have been published by federal agencies (13), notably the U.S. Geological Survey (USGS) in various chapters of their Techniques of Water Resources Investigations and their older Surface Water Techniques. Useful references from this series include numbers 14-17, and most are summarized in reference 13. Survey articles are available (5, 18, 19) that describe the hydraulics of flow measurements with reference to various agency techniques.

Surveys of available techniques as applied to urban areas are also available (20-22). All measurement aspects of urban runoff studies are documented in a recent study by Wullscheleger, et al. (23). For gaging installations in which surcharged conditions (full-conduit flow) are unlikely to exist, various critical depth devices are the most suitable for continuous stage monitoring, for example, flumes (22, 24, 25) or the venturi constriction used by the USGS (26). When surcharged conditions are likely or when velocity measurements are needed, instruments ranging from propeller meters to ultrasonic, doppler and electromagnetic flow meters are available (22, 23).

Most stage data are recorded continuously on various types of recorders. The majority of installations utilize recorders located at the site. A few telemeter data to a central location. In these cases, and for certain other types of recorders, the stage gages are "interrogated" at frequent time intervals (usually fractions of a minute), as opposed to production of a continuous inked line on a chart. With few exceptions, adequate temporal definition of the hydrograph is not a problem. Rather, the calibration or method used to calculate flow rates is of prime concern.

QUALITY DATA

Most quality data consist of concentrations of various parameters. Some parameters may be measured *in situ* (e.g., pH, conductivity, temperature, D.O.), but the majority must be obtained by laboratory analysis of samples of the flow. The principal consideration in the use of quality data for urban modeling is the method by which these samples are taken. Again, a prime concern is the time frame.

Many studies have been made in which a general characterization of urban runoff is required. For this purpose, composite quality samples have often been taken in which flow is withdrawn into a sample container over a relatively long period (e.g., from 15 minutes to one hour). Sometimes, in the interest of economy, composites are made for laboratory analysis from samples taken at shorter time periods. In any event, composite samples are of much less usefulness for most current urban runoff quality models, because predicted pollutograph ordinates need to be calibrated against instantaneous concentrations. (Note that concentrations, mg/l, may be readily converted to mass rates, lb/min, if the flow rate, cfs, is known.) Composited quality samples may thus be "better than nothing," but must be treated carefully if model verification is an objective.

Another aspect of sampling frequency concerns definition of first flush effects. A common practice is to sample frequently during the initial portion of a storm, and less frequently thereafter. This is accomplished by sampling frequently during the whole storm but providing laboratory analyses of only selected samples and discarding the remainder, to economize on the related expense. For example, it is common for a study to analyze three quality samples on the rising limb of the hydrograph, one near the peak and two on the hydrograph recession.

Even data that are usually termed instantaneous, may be inherently composited. This is due to the nature of automatic quality samplers, installed at many of the sampling locations. These samplers require a certain time to draw liquid into the sample jars, ranging from several seconds to several minutes depending upon the type of sampler and the volume of sample required. Larger volumes are required when a larger number of parameters is to be analyzed. Thus, some locations have quality samples withdrawn at 20-minute intervals, but the sample bottle requires ten minutes to fill. Hence, the result is ten-minute composites taken at 20-minute intervals. This is not necessarily incompatible with modeling applications, since quality predictions are sometimes averages over the time step used in the model.

Concerning selection and installation of automatic samplers themselves, recent studies have evaluated their characteristics and compared different types and makes (23, 27, 28). Manually obtained "grab samples" are also encountered frequently in the literature, especially when only a few runoff events are monitored. These may be quite acceptable if the procedure is well documented. Suggested water quality sampling procedures for various federal agencies are described in reference 13.

Few, if any, quality monitoring studies have sampled from more than one location within the cross sectional area of the flow. For the usual turbulent flow conditions, this is a reasonable practice, except for solids, in which some variation may be expected over the cross section. However, this is usually neglected.

It is very important that water quality parameters being sampled are identified exactly. Urban runoff quality sample analysis frequently requires variations from procedures given in Standard Methods (29) because of the emphasis in that text on analysis of domestic water and wastewater (23). Moreover, it is not always sufficient to state simply that analytical procedures follow those given in Standard Methods since there are frequently multiple options available for determination of a given parameter. For example, coliforms may be determined by both plate counts and membrane filters, using different growth media for either. Furthermore, the word "coliforms" by itself is ambiguous since total, fecal or other types may be implied. Another unnecessarily ambiguous parameter is phosphorous, since it is frequently measured as total P, phosphate, ortho-phosphate, hydrolizable P, organic P, etc. and may also be given as only the dissolved fraction.

As important as the parameter itself and type of sample (e.g., total, dissolved, fixed) are the units associated with the parameter. Again, phosphorus is a frequent culprit, in which a three-fold difference results from listing a concentration as mg/l as P versus mg/l as PO_4.

A relatively unambiguous parameter identification may be achieved by the assignment of a STORET code to each parameter. "STORET" is the acronym of only selected samples and discarding the remainder, to economize on the related expense. For example, it is common for a study to analyze three quality samples on the rising limb of the hydrograph, one near the peak and two on the hydrograph recession.

Even data that are usually termed instantaneous, may be inherently composited. This is due to the nature of automatic quality samplers, installed at many of the sampling locations. These samplers require a certain time to draw liquid into the sample jars, ranging from several seconds to several minutes depending upon the type of sampler and the volume of sample required. Larger volumes are required when a larger number of parameters is to be analyzed. Thus, some locations have quality samples withdrawn at 20-minute intervals, but the sample bottle requires ten minutes to fill. Hence, the result is ten-minute composites taken at 20-minute intervals. This is not necessarily incompatible with modeling applications, since quality predictions are sometimes averages over the time step used in the model.

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As important as the parameter itself and type of sample (e.g., total, dissolved, fixed) are the units associated with the parameter. Again, phosphorus is a frequent culprit, in which a three-fold difference results from listing a concentration as mg/l as P versus mg/l as PO_4.

A relatively unambiguous parameter identification may be achieved by the assignment of a STORET code to each parameter. "STORET" is the acronym describing EPA's Water Quality Control Information System (30). Units are clearly specified as are many analytical methods and types of sample. Water quality parameters and their STORET codes encountered during this study are given in Section VI.

COMPREHENSIVE EXAMPLES

Wullscheleger et al. (23) have prepared an excellent review and procedural guide as to all aspects of urban runoff sampling. In addition, a briefer review is provided by Lager and Smith (31) and the USGS (13). Flow measurement techniques are well covered by Shelley and Kirkpatrick (22). Case studies may be consulted for useful background information (e.g., 32-35).

TIME SYNCHRONIZATION

The fundamental model verification data are the rainfall-runoff-quality measurements discussed above. Of considerable importance is the relative time of each sample. Ideally, rainfall and runoff are recorded on the same chart (typical of USGS installations) and a mark is also made on the chart when the automatic quality sampler is switched on. This provides absolute timing on a relative scale, even if the chart is not synchronized perfectly with the time of day.

At many locations, however, isolated rain gages are used. In the absence of telemetry to a central location, the temporal correlation of rainfalls and flow rates may be questionable. One solution to this problem may result from the use of the models themselves in which predicted and measured hydrographs may differ only by a constant time shift. This time shift may then be considered as the necessary adjustment between the clocks of the rain gages and the flow recorder.

MODELING DATA

Data required for models run the gamut from generalized demographic, land use and meteorological data to the details of sewer conduit geometries, slopes, etc. Such data are nearly always available from the city or municipality or other source, but it is of great usefulness if it has been gathered already by a group interested in applying models. Thus, even though different models will require different levels of detail, most will draw upon the same basic set of input requirements, e.g., topography, land use and soil parameters, demographic data, meteorology, drainage definition, and treatment, storage and cost descriptions.

Where possible, input data suitable for urban runoff models have been collected as part of this study where such data have already been prepared as part of other studies. For all cases, attempts are being made to obtain the relevant basic data mentioned earlier. In several instances, however, it is necessary to contact the data-collecting agency or municipality directly for the required input information.

SECTION V

DATA SOURCES

INTRODUCTION

A typical conclusion in many reports related to urban hydrology is that "more data are needed." It is not always clear what purposes additional data will serve, but the attitude is almost inevitably, "the more data, the better." In spite of this generality, it has been observed during the course of this study that vast amounts of rainfall-runoff-quality data already exist, and even more are currently being collected. Of course, only a minority of these data are suitable for purposes such as modeling, although a larger fraction may be useful from the characterization viewpoint. An even smaller fraction are actually accessible in a well documented, tabulated fashion. Finally, many sources, especially university studies, are only discovered by accident; no clearinghouse for such studies exists.

Still, many data sources have been uncovered during the course of this study and new ones continue to arrive. Only the ones considered most promising from a modeling viewpoint are given herein, and it is regrettable that suitable sources have probably been omitted through oversight. It is the purpose of this section to describe past and present summaries and sources of urban runoff data and to describe specific sites for which promising data exist but which were omitted from the data base prepared during this study for various reasons. Sections VII and VIII describe in detail data sources included in the data base itself.

PUBLISHED DATA SUMMARIES

American Society of Civil Engineers

The ASCE Urban Water Resources Research Council has conducted relevant studies of urban hydrology since 1967. Among the most widely used rainfall-runoff data are those collected at the Northwood catchment in Baltimore (36) and the Oakdale catchment in Chicago (37) and published under ASCE auspices. Later summaries by Tucker on monitored rainfall (38, 39) and other urban rainfall-runoff data (40, 41, 42) remain the only conveniently published information for many catchments, including some included in this report. Thus, references 36,37, 40, 41, and 42 should still be considered as prime data sources.

Other recent ASCE publications include modeling applications (43) and a summary of activities of the Council (44). Recent NSF-sponsored work has produced summaries of available urban hydrologic data and modeling activities in the U.S. (45), Australia (46), Canada (47), the United Kingdom (48), West Germany (148), Sweden (149), France (150), Norway (151), The Netherlands (180) and Poland (181). McPherson's report (45) contains a summary of U.S. and other catchments that have actually been used for testing of several current urban hydrologic models.

Illinois State Water Survey

During 1971 the Illinois State Water Survey evaluated the capabilities of the British Road Research Laboratory (RRL) model for use in urban drainage design (49). This study included testing on ten U.S. catchments. The Survey later extended the capabilities of the RRL model to create the Illinois Urban Drainage Area Simulator (ILLUDAS) model (50). For this study, ILLUDAS was tested on rainfall-runoff data from 23 different catchments, all of which are described by Terstriep and Stall (50). The 23 include nine from the RRL study, and the report (50) provides very useful capsulized information about each catchment.

U.S. Geological Survey

The USGS has collected many of the data currently available for urban basins, and their urban hydrology programs are continuing. Several of the data sources utilized in the ILLUDAS study (50), for instance, were from the USGS. Current (1976), detailed sampling of urban rainfall-runoff-quality is being conducted in Denver, Philadelphia and Broward County, Florida. (The latter site is included in this report.) The main difficulty in utilizing USGS data is in obtaining published references to the studies. The extensive Catalogue of Information on Water Data (51), published biannually, apparently only contains references to continuing stream, lake, etc. gaging programs. Schneider's 1968 survey (52) contains some information, but is dated. A survey by the Water Resources Scientific Information Center (53) contains references to USGS urban hydrology studies as well as others. However, direct inquiries can be made to state USGS offices for information on relevant studies. In addition, most USGS quality data are placed in the EPA STORET file or the Water Data Information and Retrieval System (WATSTORE) file of the USGS itself (54) and are thus fairly easily accessible. Finally, the USGS has also established its National Water Data Exchange (NAWDEX), whose purpose is to point users to relevant data files in the manner of a clearinghouse (55).

Office of Water Resources Technology

The OWRT has sponsored several projects related to urban hydrology and data collection. Included among them have been recent studies at Rutgers, Cornell, Virginia Polytechnic Institute, University of Maryland and University of Massachusetts. Final reports from these studies are forthcoming. Data from one OWRT-sponsored study in Lincoln, Nebraska (56) are included in this report.

Environmental Protection Agency

Under the EPA and its predecessors (PHS, FWPCA, FWQA) many urban runoff studies have been conducted involving extensive sampling programs, some of which are included in this report. Although better documented than most studies, many of the earlier reports contain samples of only a few storms at several sites or rely upon composited samples, thus making them unsuitable for modeling applications. Such reports may still contain useful characterization data, however, and several are utilized for this purpose by Heaney et al. (57).

The number of potentially useful EPA-sponsored studies is too large to list each individually in this report. Also, the number is increasing because of EPA Section 201 Construction Grant and Section 208 Areawide Waste Management Grant studies currently in progress under the 1972 Amendments to the Federal Water Pollution Control Act. However, reference to some reports is made in subsequent sections.

Other Agencies

Other federal agencies also publish hydrologic data, but few data are specifically for urban applications. For example, the Agricultural Research Service (ARS) has published rainfall-runoff data for many agricultural watersheds (58) that are useful for hydrologic modeling in general. The National Weather Service (NWS), Office of Hydrology, has compiled some data for use in their river forecasting and modeling efforts, but engage in little or no acquisition themselves. Of course, the NWS through its National Climatic Center at Asheville, North Carolina is the prime source of precipitation and other meteorological data collected at NWS and some other installations. For instance, although precipitation data are routinely reduced only at hourly intervals, photocopies of the original weighing bucket charts may be obtained from which data may be reduced at finer time intervals. In addition, the parent arm of the NWS, the National Oceanic and Atmospheric Administration (NOAA), has established their ENDEX/OASIS data retrieval system for access to environmental-related data within their jurisdiction (59). However, the emphasis is upon marine data.

The Hydrologic Engineering Center (HEC) of the Corps of Engineers engages in extensive model development activities (e.g., 7) but few data collection activities. However, they have sponsored urban runoff monitoring in the San Francisco Bay region (160), which is listed in Table V-1 to follow.

References to other available hydrologic data, (though not necessarily urban), may be found in many reports, theses, dissertations, papers, etc. A report prepared as part of the International Hydrological Decade (60) contains information on 60 experimental watersheds in the U.S., but few are urban in character. A report prepared by the National Technical Information Service (NTIS) on data files available from federal agencies (61) contains only one reference to hydrologic data (to test data included with the NWS Office of Hydrology river forecast models).

DATA SOURCES IN OTHER COUNTRIES

Programs in urban hydrology in several countries have been summarized by the ASCE as discussed previously (45-48, 148-151, 180,181). Several Canadian studies are referenced in subsequent sections of this report, and data from

Windsor, Ontario are included in the data base. A summary of current activities related to urban runoff in the Great Lakes region is available (152). Another recent publication provides a useful review of available snow quality data for urban areas (62).

As additional sources to the ASCE report on Australia (46), Heeps and Mein (153) describe rainfall-runoff monitoring in Canbera and Melbourne, and Cordery (154) describes quality measurements in Sydney. Reports on urban runoff measurements in Paris (155) and Munich (156) have also been published. Additional references to monitored West German catchments may be found in other model studies (126, 174). Lindh (149) discusses data for the Bergsjön catchment near Gothenberg, Sweden. Rainfall-runoff data for this catchment may be found in reports published by Arnell and Lyngfelt (157, 158).

POTENTIAL DATA SOURCES NOT INCLUDED IN FIRST RELEASE OF DATA BASE

During the course of this study, many promising data sources were uncovered, but only a portion are included in this first release of the data base. These locations are described in detail in Sections VII and VIII. Other locations showing promise as to modeling data are listed in Table V-1 with related information. Some sources will probably be included in future addenda to this report as data are reduced or computerized for inclusion. Some sources are definitely deserving of inclusion, but were simply not available in time. Note that the vast number of sources owing to EPA 201 and 208 studies are generally not included in Table V-1, as these studies are either being initiated or have been underway for too short a period to obtain and reduce useful data. Moreover, little is known about most of them except at the local level. However, as these sources become viable and provide data to the University of Florida, they will be included in future addenda.

Table V-1. Potential Sources of Data Not Included in The Data Base

City, Catchment, and Major Land Use	Area ac (ha)	Drainage System	Reason for Exclusion	Quantity Data (Years)	Flow Meas. Technique	Quality Data (Years)	Contract	References
Atlanta, GA							1,2	63,64
Confederate Ave. (Res)	1129(457)	C	l_3,l_4	r_2,(69,73)	f_8,f_2	q_4,(69,73)		
Boulevard(Res.)	2421(980)	C	l_3,l_4	r_2,(69,73)	f_8,f_2	q_4,(69,73)		
McDaniel St.(Res.)	968(392)	C	l_3,l_4	r_2,(69,73)	f_8,f_2	q_2,(69,73)		
Harlan Dr.(Res.)	954(386)	S	l_3,l_4	r_1,(69)	f_8	q_1,(69)		
Casplan St.(Res.)	517(209)	S	l_3,l_4	r_2,(69)	f_8	q_1,(69)		
Fed. Prison (Open)	1498(606)	S	l_3,l_4	r_1,(69)	f_8	q_1,(69)		
Burlington, ON							3	62,66,67
Commercial	17.0(6.9)	S	l_2	r_3,(74-75)	f_2	q_4,(74-75)		
Cincinnati, OH							4	68,102, 129,40, 50,69
Bloody Run(Res.)	2380(964)	C	l_4	r_2,(70)	f_1,f_2	q_3,(70)		
Mt. Washington(Res.)	27(11)	S	l_5	r_2,(62-64)	f_2	q_1,(62-63)		
Cleveland, OH							5	70
Madison (Res.)	2550(1030)	C	l_1,l_2,l_3	r_1,(66-67)	f_1	q_1,(66-67)		
Edgewater(Res.)	1840(745)	S	l_1,l_2,l_3	r_1,(66-67)	f_2	q_1,(66-67)		
Des Moines, IA							7	73
Several Residential		C&S	l_3	r_1,(69)	f_2	q_1,(69)		

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Table V-1. Potential Sources of Data Not Included in the Data Base (Continued)

City, Catchment, and Major Land Use	Area ac (ha)	Drainage System	Reason For Exclusion	Quantity Data (years)	Flow Meas. Technique	Quality Data (Years)	Contract	References
Detroit, MI Oakwood (Res.)	1500(607)	C	l_1, l_2, l_3	r_2,(74-date)	f_7	q_5	8	42,130, 170
Halifax, N.S.							10	75,76,77 78
Quinpool Rd.(Com.)	1.0(0.4)	C^a	l_3	r_1,(69-70)	f_2	q_1,(69-70)		
Cambridge St.(Res.)	2.4(1.0)	C^a	l_3	r_1,(69-70)	f_2	q_1,(69-70)		
Total Area	168(68)	C^a	l_3	r_1,(69-70)	f_4	q_1,(69-70)		
Hamilton, ON Hamilton Mt.(Res.)	176(71)	C	l_2	r_1,(75-76)	f_2	q_2,(75-76)	11	79
Houston, TX Woodlands(Res.)	multiple sites	S	l_3	r_3,(73-76)	f_8	q_4,(73-76)	12	80,169
Other Houston		S	l_1	r_2,(65-69)		q_5	13	41,42,50, 164-168
Kingston, ON Calvin Park(Res.)	36(15)	S	l_5	r_2,(73-74)	f_2	None	14	62,81,82
Louisville, KY Multiple Sites		S	l_1, l_5	$r_{;}$,(45-47)	f_8	None	16	50,83,84

Table V-1. Potential Sources of Data Not Included in the Data Base (Continued)

City, Catchment, and Major Land Use	Area ac (ha)	Drainage System	Reasons for Exclusion	Quantity Data (Years)	Flow Meas. Technique	Quality Data (years)	Contract	References
Lubbock, TX Clapp Park (Res.)	223(90.2)	S	l_5	r_2,(71-72)	f_3	q_4,(71-72)	17	85
Milwaukee, WI Humbolt Ave.(Res.)	570(231)	C	l_3,l_4	r_3,(71-72)	f_2,f_8	q_4,(71-75)	18	32,41, 162
Occoquan Watershed, VA Several Urban		S	l_5	r_3,(74-date)	f_2,f_8	q_4,(74-date)	19	86
Orlando, FL Lake Eola (Com.)	28(11.3)	S	l_2,l_6	r_1,(73-74)	f_1	q_1,(73-74)	20	87,88,89
Lake Eola (Res.)	16(6.5)	S	l_2,l_6	r_1,(73-74)	f_1	q_1,(73-74)		
Richmond, VA Multiple Sites		S	l_2			q_5	21	
Rochester, NY Multiple Sites		C,S	l_1,l_2,l_3	r_3,(74-76)	f_2,f_9	q_4,(74-76)	22	147,173
San Francisco Bay, CA Castro Valley[Hayward] Res.	3200(1300)	S	l_5	r_3,(72-76)	f_2	q_4,(72-76)	24	160
Peralta Cr. [Oakland] Res.	1280(520)	S	l_5	r_1,(73)	f_2	q_2,(73)		
Ross Cr.[San Jose] Res.	4480(1810)	S	l_5	r_1,(73-74)	f_2	q_2,(73-74)		
Strong Ranch Sl. [Sacramento] (Res.)	3200(1300)	S	l_5	r_1,(73-76)	f_2	q_4,(73-76)		

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Table V-1. Potential Sources of Data Not Included in the Data Base (Continued)

City, Catchment, and Major Land Use	Area ac (ha)	Drainage System	Reasons for Exclusion	Quantity Data (Years)	Flow Meas. Technique	Quality Data (Years)	Contract	References
Syracuse, NY							22	147
Maltbie St.(Com.)	135(54.6)	C	$1_1, 1_3$	r_3,(73-76)	f_2	q_4,(73-76)		
Newell St.(Res.)	54(21.9)	C	$1_1, 1_3$	r_3,(73-76)	f_2	q_4,(73-76)		
Tallahassee, FL							25	90
Meginnis Arm (Res.)	1780(721)	S	$1_1, 1_3$ $1_5, 1_6$	r_3,(74-75)	f_8	q_4,(74-75)		
Toronto, ON								
Int. Airport	495(200)	S	$1_1, 1_3$	r_1,(74-75)	f_1	q_1,(74-75)	26	62,95
West Toronto (Res.)	2330(943)	C	$1_1, 1_4$	r_3,(69-76)	f_2	None	28	62,63
Tucson, AZ							29	96-99
Multiple Sites		S	1_3	r_3,(67-75)	f_3	q_4,(67-75)		
Washington, DC							30	100,102
Kingman Lake (Res.)	4200(1700)	C	$1_3, 1_6$	r_3,(69)	f_1	q_1,(69)		
Winnipeg, MB							31	62,63
Bannatyne (Com.)	542(219)	C	$1_5, 1_6$	r_3,(69-71)	f_2	q_1,(69-71)		

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Table V-1 (concluded)

City, Catchment, and Major Land Use	Area ac(ha)	Drainage Systems	Reasons for Exclusion	Quantity Data(Years)	Flow Meas. Technique	Quality Data(Years)	Contact	References
Tucson, AZ Multiple sites		S	1_3	r_3,(67-75)	f_3	q_4,(67-75)	29	96-99
Washington, DC Kingman Lake(Res.)	4200(1700)	C	$1_3,1_6$	r_3,(69)	f_1	q_1,(69)	30	100,102
Winnipeg, MAN Bannatyne(Com.)	542(219)	C	$1_5,1_6$	r_3,(69-71)	f_2	q_1,(69-71)	31	62,63

Notes for Table V-1

Codes--

f_1	Stage measurement in conduits converted to flow using Manning equation
f_2	Weir
f_3	Parshall flume
f_4	Other critical depth measurement
f_5	Dye dilution
f_6	Calibrated flow constriction
f_7	Pumping records
f_8	Stage discharge calibration
f_9	Flow meter
l_1	Lack of sufficient documentation
l_2	Program being initiated or too few data to date
l_3	Data not in suitable form for transmittal or further reduction required
l_4	Data questionable or requiring re-analysis
l_5	Data unavailabe to UF in time
l_6	Large sampling interval, portions missing, or unsuitable for modeling
q_1	Yes, few parameters, < 10 storms
q_2	Yes, several parameters, < 10 storms
q_3	Yes, few parameters, > 10 storms
q_4	Yes, several parameters, > 10 storms
q_5	Program being initiated
r_1	Yes, < 10 storms
r_2	Yes, 10-20 storms
r_3	Yes, > 20 storms
C	Combined sewer systems
S	Storm sewer and/or natural drainage system.

Notes for Table V-1 (continued)

Contacts--

1. Mr. Allen Fields, Environment and Streets, City of Atlanta, City Hall, Atlanta, Georgia 30303.
2. Black, Crow & Eidsness, Inc., Consulting Engineers, 1261 Spring St. NW, Atlanta, Georgia 30309.
3. Mr. J. Marsalek, Hydraulics Research Division, Canada Centre for Inland Waters, Box 5050, Burlington, Ontario L7R 4A6.
4. Dr. H.C. Pruel, Dept. of Civil Engineering, University of Cincinnati, Cincinnati, Ohio 45221.
5. Mr. L.W. Curtis, Havens and Emerson, Ltd., 1220 Leader Bldg., Cleveland, Ohio 44114.
6. Mr. J. Biesecker, District Chief, U.S. Geological Survey, Water Resources Division, Stop 415, Box 25046, Denver Federal Center, Denver, Colorado 80225.
7. Henningson, Durham and Richardson, Inc., 8404 Indian Hills Drive, Omaha, Nebraska 68114.
8. Mr. D. Suhry, Director of Engineering, Detroit Metro Water Department, Water Board Bldg., Detroit, Michigan 48226.
9. Dr. D.D. Adrian, Dept. of Civil Engineering, University of Massachusetts, Amherst, Massachusetts 01002.
10. Dr. D.H. Waller, Dept. of Civil Engineering, Nova Scotia Technical University, Box 1000, Halifax, Nova Scotia.
11. Mr. C.W. Eicher, Gore and Storrie, Ltd., 1670 Bayview Avenue, Toronto, Ontario M4G 3C2.
12. Dr. W. Characklis, Dept. of Environmental Science and Engineering, Rice University, Houston, Texas 77001.
13. U.S. Geological Survey, Water Resources Division, 2320 La Branch St., Room 1112, Houston, Texas 77004.
14. Dr. W.E. Watt, Dept. of Civil Engineering, Queen's University, Kingston, Ontario K7L 3N6.
15. Dr. A. Rao, Dept. of Civil Engineering, Purdue University, Lafayette, Indiana 47907.
16. District Engineer, U.S. Army Engineer District, Louisville, 600 Federal Plaza, Box 59, Louisville, Kentucky 40201.

17. Dr. D. Wells, Water Resources Center, Texas Tech University, Lubbock, Texas 79409.

18. City of Milwaukee, Dept. of Public Works, Milwaukee, Wisconsin 53202.

19. Dr. T. Grizzard, Laboratory Director, Occoquan Watershed Monitoring Laboratory, Virginia Polytechnic Institute, Box 773, Manassas, Virginia 22110.

20. Dr. M. Wanielista, College of Engineering, Florida Technological University, Box 25000, Orlando, Florida 32816.

21. Mr. K.C. Das, Director, Division of Special Projects, Piedmont Regional Office, State Water Control Board, Box 11143, Richmond, Virginia 23230.

22. Mr. D. Carleo, O'Brien & Gere Engineers, 1304 Buckley Rd., Syracuse, New York 13201.

23. Utah Water Research Laboratory, Utah State University, Logan, Utah 84322.

24. Mr. Bill S. Eichert, Director, The Hydrologic Engineering Center, Corps of Engineers, 609 2nd St., Davis, California 95616.

25. Dr. R.C. Harriss, Dept. of Oceanography, Florida State University, Tallahassee, Florida 32306.

26. Dr. P.E. Wisner, James F. MacLaren Ltd., 435 McNicoll Ave., Willowdale, Ontario M2H 2R8.

27. Mr. E. Larsen, M.M. Dillon Ltd., 50 Holly St., Toronto, Ontario M4S 2E9.

28. Mr. C.S. Kitchen, Data Retrieval and Reporting, Dept. of Public Works, 24th Floor, East Tower, City Hall, Toronto, Ontario M5H 2N2.

29. Dr. S. Resnick, University of Arizona, Water Resources Research Center, Bldg. No. 28, Tucson, Arizona 85721.

30. Roy F. Weston, Inc., Weston Way, West Chester, Pennsylvania 19380.

31. Mr. G.E. Burns, Manager of Engineering, Waterworks, Waste and Disposal Division, City of Winnipeg, 455 Ellice Ave., Winnipeg, Manitoba R3B 1Y6.

SECTION VI

DATA BASE FORMAT

TYPES OF INFORMATION

At least four types of information are potentially available for each location utilized as a data source:

1. physical, demographic, etc. descriptions of the sites, plus maps, parameters and sampling methods;

2. published reports and other written documentation;

3. the rainfall-runoff-quality data themselves; and

4. associated modeling data, e.g., maps, plans, photos, etc.

Sections VII and VIII contain item 1 in write-ups for each location. A standardized tabular format is used for all sites. Item 2 is handled through a list of references for each location. Item 3 is handled separately, wherein all data have been coded and placed on a magnetic tape, the format of which is explained below. UF has been able to obtain a limited amount of data needed for model input, item 4. These will be available for short-term loan. The remainder of such data will have to be obtained from contacts with individuals at each location. In addition, input data for the EPA Storm Water Management Model, SWMM (101-103) are available for a few locations.

DATA IDENTIFICATION

Location Identification

For computer coding, all locations are given a state, city and catchment code. State codes are the standard two-character mnemonics used by the Postal Service. These are listed in Table VI-1. Canadian provinces are identified in the same manner, as given in Table VI-1. Since each mnemonic must be unique, the most logical two-character provincial identifier is not always used in order to avoid conflicts with state mnemonics.

A two-digit numeric code is arbitrarily assigned to each data location within a state. Similarly, a two-digit numeric code is then assigned to each catchment at a given location. These numbers have been assigned strictly on the basis of the order in which each location has been processed for the data base. They are identified along with each description, in Sections VII and VIII. An index is provided in Table VI-2.

Table VI-1. State and Provincial Mnemonics

Area	Mnemonic	Area	Mnemonic
Alabama	AL	Nevada	NV
Alaska	AK	New Brunswick	NK
Alberta	AB	Newfoundland	NF
Arizona	AZ	New Hampshire	NH
Arkansas	AR	New Jersey	NJ
British Columbia	BC	New Mexico	NM
California	CA	New York	NY
Colorado	CO	North Carolina	NC
Connecticut	CT	Nova Scotia	NS
Delaware	DE	Ohio	OH
District of Columbia	DC	Oklahoma	OK
Florida	FL	Ontario	ON
Georgia	GA	Oregon	OR
Hawaii	HI	Pennsylvania	PA
Idaho	ID	Prince Edward Island	PI
Illinois	IL	Puerto Rico	PR
Indiana	IN	Quebec	PQ
Iowa	IA	Rhode Island	RI
Kansas	KS	Saskatchewan	SS
Kentucky	KY	South Carolina	SC
Louisiana	LA	South Dakota	SD
Maine	ME	Tennessee	TN
Manitoba	MB	Texas	TX
Maryland	MD	Utah	UT
Massachusetts	MA	Vermont	VT
Michigan	MI	Virginia	VA
Minnesota	MN	Virgin Islands	VI
Mississippi	MS	Washington	WA
Missouri	MO	West Virginia	WV
Montana	MT	Wisconsin	WI
Nebraska	NB	Wyoming	WY

Table VI-2 Index to Location ID Codes

Code	State	City	Catchment
CA 1 1	California	San Francisco	Baker St.
CA 1 2			Mariposa St.
CA 1 3			Brotherhood Way
CA 1 4			Vicente St., N.
CA 1 5			Vicente, St., S.
CA 1 6			Selby St.
CA 1 7			Laguna St.
CA 2 1	California	Los Angeles	Echo Park
FL 1 1	Florida	Broward County	Residential
FL 1 2			Transportation
FL 1 3			Commercial
IL 1 1	Illinois	Chicago	Oakdale
IL 2 1	Illinois	Champaign-Urbana	Boneyard Creek
KS 1 1	Kansas	Wichita	Dry Creek
MD 1 1	Maryland	Baltimore	Gray Haven
MD 1 2			Northwood
MS 1 1	Mississippi	Jackson	Crane Creek
NB 1 1	Nebraska	Lincoln	39 & Holdrege
NB 1 2			63 & Holdrege
NB 1 3			78 & A
NC 1 1	North Carolina	Winston-Salem	Tar Branch
NC 2 1	North Carolina	Durham	Third Fork
NY 1 1	New York	Westbury	Woodoak Dr.
OH 1 1	Ohio	Bucyrus	Sewer District 8
ON 1 1	Ontario	Windsor	Labadie Rd.
OR 1 1	Oregon	Portland	Eastmoreland
PA 1 1	Pennsylvania	Lancaster	Stevens Ave.
PA 2 1	Pennsylvania	Philadelphia	Wingohocking

Table VI-2 (continued)

Code	State	City	Catchment
TX 1 1	Texas	Houston	Hunting Bayou (Cavalcade St.)
TX 1 2			Hunting Bayou (Falls St.)
TX 1 3			Bering Ditch
TX 1 4			Berry Creek
VA 1 1	Virginia	Falls Church	Tripps Run
WA 1 1	Washington	Seattle	View Ridge 1
WA 1 2			View Ridge 2
WA 1 3			South Seattle
WA 1 4			Southcenter
WA 1 5			Lake Hills
WA 1 6			Highlands
WA 1 7			Cent. Bus. Dist.
WI 1 1	Wisconsin	Racine	Site I
1979 Additional Locations			
IN 1 1	Indiana	West Lafayette	Ross Ade (Upper)
MA 1 1	Massachusetts	Greenfield	Maple Brook
MA 2 1	Massachusetts	Northampton	Market Street Brook
UT 1 1	Utah	Salt Lake City	Layton
UT 1 2	Utah	Salt Lake City	Parleys Canyon I
UT 1 3	Utah	Salt Lake City	Parleys Canyon II
1980 Additional Locations			
CO 1 1	Colorado	Denver	Big Dry Creek Trib., Littleton
CO 1 2			North Ave. Denver Fed. Center, Lakewood
CO 1 3			Thirty Sixth Street
CO 1 4			South Platte Trib. No. 2, Northglenn
CO 1 5			Harvard Gulch
CO 1 6			Concourse D Drain, Stapleton Airport
FL 2 1	Florida	Dade County	Multi-family residential

Table VI-2 (concluded)

Code	State	City	Catchment
IL 1 2	Illinois	Chicago	Ravine Drive, Highland Park
IL 1 3			Woodfield, Rolling Meadows
IL 1 4			Centex, Elk Grove Village
IL 1 5			Seymour Ave., Mundelein
IL 1 6			Glen Ellyn Rd., Glendale Heights
IL 1 7			Addison Ave., Elmhurst
IL 1 8			Springingsguth Rd., Schaumburg
IL 1 9			Park Forest South
IL 110			Winston Village, Bolingbrook
IL 111			State Highway 83, Clarendon Hills
IL 112			Perry Road
IL 113			Beecher-Peotone Road
IL 114			Olcott Road
IL 115			Pioneer Woods, Palos Park
IL 116			Alden Road
IL 117			Hawthorn Center, Vernon Hills
ON 2 1	Ontario	Burlington	Malvern
ON 3 1	Ontario	Toronto	Urban, East York
ON 3 2			Brucewood, North York

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Table VI-2a Changes in Parameter Code Numbers Implemented in the New Version of Table VI-3 (1980)

Old Code	New Code
1107	1105
70351	552
90035	118
90036	119
90037	120
90038	121
90039	122
90040	123
90045	124
90046	125
90047	126
90048	127
90049	128
90050	129
90051	117
90052	91
90053	92
90055	93
90060	80099
90063	89
90064	88
90065	101
90066	102
90067	103
90068	104
90069	61405
90070	61405
90100	132

Old codes are used in tables of Quality Parameters, for cities until 1980. New codes are used in the tables of Quality Parameters for 1980 cities and the statistical tables for all cities.

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PARAMETER IDENTIFICATION

Each quantity and quality parameter is identified with its appropriate five-digit STORET code(30). The codes for the parameters on the tape are given in Table VI-3 along with the units used. As discussed previously, in most cases, STORET codes have the advantage of implying the units, type of sample (e.g., total, fixed, or dissolved) and the analytical technique used. A complete list of STORET codes may be found in the STORET manual(30), or accesed via the STORET system using the online program PARLIST.

CODING FORMAT

The Rainfall-Runoff-Quality data on the tape are separated by catchment and by event. Each catchment corresponds to one tape file. The events on a file are separated by a blank record and the final event in the file has a blank record before the tapemark signifying the end of the file.

The STORET code numbers for many parameters have been changed in this edition of the Database report. Look at Table VI-2a for a listing of the parameter codes changed.

A typical grouping of data is shown in Figure VI-1. Note that a title card containing the name of the city, state and catchment precedes the data for the catchment. The format for this title card can be seen in Figure VI-2. The second record contains information on the number of events in the file (NOE), the number of quality STORET parameters in the file (NOP), the number of raingages in the file (NOG), the type of catchment(i.e., storm or combined) listed respectively as 'S' or 'C' (TOC), and the type of raingage information listed as either 'INT.' -- intensity, or 'CUM.' -- cumulative, (TOG). The format for the second record can be seen in Figure VI-3. If there are quality STORET parameters in the file the next 1-3 lines will list the STORET codes for the parameters. Figure VI-4 illustrates the format for this type of record. Quality parameters are all the non-flow, non-raingage STORET parameters.

After the quality parameter listing are the parameter information records and parameter value records. There is one parameter information record for each different STORET code in one event. The parameter value records follow the parameter information record and can be 1 to 100 records long.

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Table VI-3. STORET and University of Florida Codes

Code	Parameter and Units	Chemical Symbol or Abbreviation
10	Temperature, Water, [°C]	
11	Temperature, Water, [°F]	
45	Precipitation, total [in./day or in./storm[a]]	
53	Catchment area, [acres]	
61	Flow, instantaneous stream or conduit[b], [ft^3/sec=cfs]	
65	Stage, [ft]	
70	Turbidity, [Jackson Turbidity Units=JTU]	
80	Color, [Platinum Cobalt Units=PCU]	
88	Settled BOD_5, [mg/l]	Set. BOD_5
89	Settled COD_5, [mg/l]	Set. COD_5
91	Minimum flow, lower bound when flow reported over a range, [cfs]	
92	Maximum flow, upper bound when flow reported over a range, [cfs]	
93	Floatables, [mg/l]	
94	Conductivity, field, [μmhos/cm at 25°C]	
95	Conductivity, [μmhos/cm at 25°C]	
101	Percent suspended solids on 74 μ filter, [%]	
102	Percent suspended solids on 14 μ filter, [%]	
103	Percent suspended solids on 5 μ filter, [%]	
104	Percent suspended solids on 0.45 μ filter, [%]	
117	Precipitation, storm event duration, [min]	
118	Precipitation, cumulative at given time, sixth gage, [in]	
119	Precipitation, cumulative at given time, fifth gage, [in]	
120	Precipitation, cumulative at given time, fourth gage, [in]	
121	Precipitation, cumulative at given time, third gage, [in]	
122	Precipitation, cumulative at given time, second gage, [in]	
123	Precipitation, cumulative at given time, principal gage, [in]	
124	Precipitation intensity, beginning at given time, sixth gage, [in/hr]	
125	Precipitation intensity, beginning at given time, fifth gage, [in/hr]	
126	Precipitation intensity, beginning at given time, fourth gage, [in/hr]	
127	Precipitation intensity, beginning at given time, third gage, [in/hr]	
128	Precipitation intensity, beginning at given time, second gage, [in/hr]	

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Table VI-3 STORET and University of Florida Codes

Code	Parameter and Units	Chemical Symbol or Abbreviation
129	Precipitation intensity, beginning at given time, principal gage, [in/hr]	
132	Dry days preceding storm event, [days]	
299	Oxygen, dissolved, by probe, [mg/l]	DO
300	Oxygen, dissolved, [mg/l]	DO
301	Oxygen, dissolved, [% saturation]	DO
310	Biochemical oxygen demand, 5-day, 20°C, [mg/l]	BOD_5
311	Biochemical oxygen demand, dissolved, 5-day, [mg/l]	Diss. BOD_5
324	Biochemical oxygen demand 20-day, 20°C, [mg/l]	BOD_{20}
335	Chemical oxygen demand, low level, .025N K2CR20F, [mg/l]	COD_{low}
340	Chemical oxygen demand, high level, .25N K2CR20F, [mg/l]	COD_{high}
341	Chemical oxygen demand, dissolved, .25N K2CR20F, [mg/l]	Diss. COD
400	pH, [standard units]	pH
403	pH, lab, [standard units]	pH_{lab}
405	Carbon dioxide, [mg/l as CO_2]	CO_2
410	Alkalinity, total, [mg/l as $CaCO_3$]	
440	Bicarborate ion, [mg/l as HCO_3]	
445	Carbonate ion, [mg/l as CO_3]	
480	Salinity, [parts per thousand = ppt]	
500	Residue, total (total solids), [mg/l]	TS
505	Residue, total volatile, (total volatile solids), [mg/l]	TVS
510	Residue, total fixed, (total fixed solids), [mg/l]	TFS
515	Residue, total filtrable (dried at 105°C), [mg/l]	TDS
520	Residue, volatile filtrable, [mg/l]	VDS
525	Residue, fixed filtrable, [mg/l]	FDS
530	Residue, total nonfiltrable (total suspended solids), [mg/l]	TSS or SS
535	Residue, volatile nonfiltrable, [mg/l]	VSS
540	Residue, fixed nonfiltrable, [mg/l]	FSS
544	Residue, volatile settleable (volatile settleable solids), at 45 min[c], [mg/l]	
545	Residue, settleable, (settleable solids), at 45 min[c], [ml/l]	Set. S
546	Residue, settleable, (settleable solids), at 45 min[c], [mg/l]	Set. S
552	Oil and grease, hexane extraction, total, rec., [mg/l]	
600	Nitrogen, total, [mg/l as N]	Tot. N
605	Nitrogen, total organic, [mg/l as N]	Org. N

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Table VI-3 STORET and University of Florida Codes

Code	Parameter and Units	Chemical Symbol or Abbreviation
608	Nitrogen, ammonia, dissolved, [mg/l as N]	Diss. NH_3-N
610	Nitrogen, total ammonia, [mg/l as N]	NH_3-N
615	Nitrite nitrogen, total, [mg/l as N]	NO_2-N
620	Nitrate nitrogen, total, [mg/l as N]	NO_3-N
625	Nitrogen, total Kjeldahl, [mg/l as N]	TKN
630	Nitrite plus nitrate, total, (one determination), [mg/l as N]	NO_2-N+NO_3-N
650	Phosphate, total, [mg/l as PO_4]	TPO_4-PO_4
653	Phosphate, total soluble, [mg/l as PO_4]	TPO_4-PO_4(sol)
660	Orthophosphate, total, [mg/l as PO_4]	OPO_4-PO_4
665	Phosphate, total (wet method), [mg/l as P]	Tot. P
666	Phosphorus, dissolved (wet method), [mg/l as P]	Diss. P
669	Phosphorus total hydrolyzable, [mg/l as P]	Tot. hyd.-P
671	Phosphorus orthophosphate, dissolved, [mg/l as P]	OPO_4-P(sol)
672	Phosphorus dissolved hydrolyzable, [mg/l as P]	Diss. hyd.-P
680	Carbon, total organic, [mg/l as C]	TOC
681	Carbon, dissolved organic, [mg/l as C]	Diss. OC
685	Carbon, total inorganic, [mg/l as C]	TIC
689	Carbon, suspended organic, [mg/l as C]	SOC
690	Carbon, total, [mg/l as C]	Tot. C
900	Hardness, total, [mg/l as $CaCO_3$]	
901	Hardness, carbonate, [mg/l as $CaCO_3$]	
902	Hardness, non-carbonate, [mg/l as $CaCO_3$]	
915	Calcium, dissolved, [mg/l as Ca]	Diss. Ca
916	Calcium, total, [mg/l as Ca]	Tot. Ca
925	Magnesium, dissolved, [mg/l as Mg]	Diss. Mg
927	Magnesium, total, [mg/l as Mg]	Tot. Mg
929	Sodium total, [mg/l as Na]	Tot. Na
930	Sodium dissolved, [mg/l as Na]	Diss. Na
931	Sodium Adsorption, Ratio	SAR
935	Potassium, dissolved, [mg/l as K]	Diss. K
937	Potassium, total, [mg/l as K]	Tot. K
940	Chloride, [mg/l as Cl]	Cl
945	Sulfate, total, [mg/l as SO_4]	Tot. SO_4
946	Sulfate, dissolved, [mg/l as SO_4]	Diss. SO_4
950	Fluoride, dissolved, [mg/l as F]	Diss. F
955	Silica, dissolved, [mg/l as SiO_2]	Diss. SiO_2
956	Silica, total, [mg/l as SiO_2]	Tot. SiO_2

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Table VI-3 STORET and University of Florida Codes

Code	Parameter and Units	Chemical Symbol or Abbreviation
1002	Arsenic, total, [μg/l as As]	Tot. As
1027	Cadmium, total, [μg/l as Cd]	Tot. Cd
1034	Chromium, total, [μg/l as Cr]	Tot. Cr
1037	Cobalt, total, [μg/l as Co]	Tot. Co
1041	Copper, suspended, [μg/l as Cu]	Susp. Cu
1042	Copper, total, [μg/l as Cu]	Tot. Cu
1045	Iron, total, [μg/l as Fe]	Tot. Fe
1051	Lead, total, [μg/l as Pb]	Tot. Pb
1055	Manganese, total, [μg/l as Mn]	Tot. Mn
1056	Manganese, dissolved, [μg/l as Mn]	Diss. Mn
1067	Nickel, total, [μg/l as Ni]	Tot. Ni
1082	Strontium, total, [μg/l as Sr]	Tot. Sr
1092	Zinc, total, [μg/l as Zn]	Tot. Zn
1105	Aluminum, total, [μg/l as Al]	Tot. Al
31501	Coliform, tot., membrane filter, immed. M-endo media, 35°C [MPN/100 ml][d]	Tot. Colif.
31503	Coliform, tot., membrane filter, delayed, M-endo media, 35°C, [MPN/ 100 ml][d]	Tot. Colif.
31504	Coliform, tot., membrane filter, immed., Les endo. agar, 35°C, [MPN/100 ml][d]	Tot. Colif.
31505	Coliform, tot., MPN confirmed test, 35°C, [MPN/100 ml][d]	Tot. Colif.
31615	Coliform, fecal, MPN, Ec. media, 44.5°C, [MPN/100 ml][d]	Fec. Colif.
31616	Coliform, fecal, membrane filt., M-fc. broth, 44.5°C, [MPN/100 ml][d]	Fec. Colif.
31673	Streptococci, fecal, membr. filt., KF agar, 35°C, 48 hrs, [MPN/100 ml][d]	Fec. Strep.
31679	Streptococci, fecal, MFM-enterococcus agar, 35°C, 48 hrs, [MPN/100 ml][d]	Fec. Strep.
32730	Phenolics, total, recoverable, [μg/l]	Tot. Phenols
50055	Depth of flow in pipe or conduit, [in]	
61405	Survival, percent in 96 hrs, (undiluted sample), [%]	
70299	Solids, suspended-evaporation at 180°C, [mg/l]	TSS or SS
70300	Residue, total filtrable-dried at 180°C (dissolved), [mg/l]	TDS
70506	Phosphate, tot. sol. colorimetric method, [mg/l as P]	TPO_4-P (sol)
70507	Phosphorus in total orthophosphate, [mg/l as P]	OPO_4-P
71886	Phosphorus, total, as PO_4, [mg/l]	Tot. P-PO_4

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Table VI-3 STORET and University of Florida Codes

Code	Parameter and Units	Chemical Symbol or Abbreviation
71887	Nitrogen, total, as NO_3, [mg/l]	Tot. N-NO_3
71889	Phosphate, ortho., soluble as PO_4, [mg/l]	OPO_4-PO_4 (sol)
71990	Mercury, total, [μg/l as Hg]	Tot. Hg
72005	Sample source code (BM well data)[f]	
80099	Residue, settleable in 1/2 hour, [ml/l]	

---

[a] Code also used for total storm depths as defined by data source, (i.e., the storm duration may be unequal to one day).

[b] Code also used for conduit flows (most urban data).

[c] Code also used for settleable solids at 60 min.

[d] On data tape, coliforms, etc. are given as 100 · $\log_{10}$ (MPN/100 ml).

[e] Storm duration given in absence of detailed rainfall hyetograph.

[f] Refers to 26 site sampling effort.

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         000000000111111111122222222223333333333444444444455555555556666666666777777777788888888889
REC#     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

   1     BROWARD COUNTY, FLORIDA.  RESIDENTIAL.          (FL 1 1)                                **
   2     NOE   74 NOP   29 NOG    3 TOC    S TOG CUM.                                            **
   3        70   80   95  310  340  500  515  600  605  610  615  620  665  680  685  690**
   4       940 1027 1034 1042 1045 1051 1092315013161631679702997050772005                       **
   5    FL 1 1    EVENT   1 YEAR74 STORET CODE    53 TOTAL VALUES    1                           **
   6                40.80                                                                        **
   7    FL 1 1    EVENT   1 YEAR74 STORET CODE    61 TOTAL VALUES  121                           **
   8     41623 0  0.0     41623 1  0.0     41623 2  0.0     41623 3  0.0     41623 4  0.0     **
   9     41623 5  0.0     41623 6  0.0     41623 7  0.0     41623 8  0.0     41623 9  0.0     **
  10     4162310  0.0     4162311  0.0     4162312  0.0     4162313  0.0     4162314  0.0     **
  11     4162315  0.0     4162316  0.0     4162317  0.0     4162318  0.0     4162319  0.0     **
  12     4162320  0.0     4162321  0.0     4162322  0.0     4162323  0.0137  4162324  0.1081**
  13     4162325  0.1921  4162326  0.2879  4162327  0.3396  4162328  0.3935  4162329  0.5075**
  14     4162330  0.6291  4162331  0.7575  4162332  0.8241  4162333  0.9618  4162334  0.9618**
  15     4162335  0.9618  4162336  0.9618  4162337  0.9618  4162338  0.9618  4162339  0.8922**
  16     4162340  0.8241  4162341  0.6925  4162342  0.6291  4162343  0.6291  4162344  0.5674**
  17     4162345  0.5674  4162346  0.5075  4162347  0.5075  4162348  0.4495  4162349  0.4495**
  18     4162350  0.3935  4162351  0.3935  4162352  0.3396  4162353  0.3396  4162354  0.2879**
  19     4162355  0.2879  4162356  0.2879  4162357  0.2387  4162358  0.2387  4162359  0.1921**
  20     417 0 0  0.1921  417 0 1  0.1921  417 0 2  0.1485  417 0 3  0.1485  417 0 4  0.1485**
  21     417 0 5  0.1081  417 0 6  0.1081  417 0 7  0.1081  417 0 8  0.0715  417 0 9  0.0715**
  22     417 010  0.0715  417 011  0.0715  417 012  0.0715  417 013  0.0715  417 014  0.0715**
  23     417 015  0.0715  417 016  0.0715  417 017  0.0715  417 018  0.0715  417 019  0.0715**
  24     417 020  0.0715  417 021  0.0396  417 022  0.0396  417 023  0.0396  417 024  0.0137**
  25     417 025  0.0137  417 026  0.0137  417 027  0.0137  417 028  0.0137  417 029  0.0137**
  26     417 030  0.0137  417 031  0.0137  417 032  0.0137  417 033  0.0137  417 034  0.0137**
  27     417 035  0.0137  417 036  0.0137  417 037  0.0137  417 038  0.0137  417 039  0.0137**
  28     417 040  0.0     417 041  0.0     417 042  0.0     417 043  0.0     417 044  0.0     **
  29     417 045  0.0     417 046  0.0     417 047  0.0     417 048  0.0     417 049  0.0     **
  30     417 050  0.0     417 051  0.0     417 052  0.0     417 053  0.0     417 054  0.0     **
  31     417 055  0.0     417 056  0.0     417 057  0.0     417 058  0.0     417 059  0.0     **
  32     417 1 0  0.0                                                                         **
  33    FL 1 1    EVENT   1 YEAR74 STORET CODE   123 TOTAL VALUES  121                           **
  34     41623 0  0.0     41623 1  0.0     41623 2  0.0     41623 3  0.0     41623 4  0.0015**
  35     41623 5  0.0015  41623 6  0.0015  41623 7  0.0015  41623 8  0.0015  41623 9  0.0015**
  36     4162310  0.0015  4162311  0.0015  4162312  0.0015  4162313  0.0015  4162314  0.0015**
  37     4162315  0.0168  4162316  0.0429  4162317  0.0704  4162318  0.1026  4162319  0.1194**
  38     4162320  0.1348  4162321  0.1363  4162322  0.1363  4162323  0.1363  4162324  0.1547**
  39     4162325  0.1715  4162326  0.1960  4162327  0.2297  4162328  0.2542  4162329  0.2665**
  40     4162330  0.2680  4162331  0.2695  4162332  0.2695  4162333  0.2695  4162334  0.2695**
  41     4162335  0.2695  4162336  0.2695  4162337  0.2695  4162338  0.2695  4162339  0.2695**
  42     4162340  0.2695  4162341  0.2695  4162342  0.2695  4162343  0.2695  4162344  0.2695**
  43     4162345  0.2695  4162346  0.2695  4162347  0.2695  4162348  0.2695  4162349  0.2695**
  44     4162350  0.2695  4162351  0.2695  4162352  0.2695  4162353  0.2695  4162354  0.2695**
  45     4162355  0.2695  4162356  0.2695  4162357  0.2695  4162358  0.2695  4162359  0.2695**
  46     417 0 0  0.2695  417 0 1  0.2695  417 0 2  0.2695  417 0 3  0.2695  417 0 4  0.2695**
  47     417 0 5  0.2695  417 0 6  0.2695  417 0 7  0.2695  417 0 8  0.2695  417 0 9  0.2695**
  48     417 010  0.2695  417 011  0.2695  417 012  0.2695  417 013  0.2695  417 014  0.2695**
  49     417 015  0.2695  417 016  0.2695  417 017  0.2695  417 018  0.2695  417 019  0.2695**
  50     417 020  0.2695  417 021  0.2695  417 022  0.2695  417 023  0.2695  417 024  0.2695**
```

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Figure VI-1. Example of Data for Broward County.

PAGE NUMBER

EPA Form 2350-4 (4-80)

(PREVIOUSLY CIN. EPA FORM 287)

U.S. GOVERNMENT PRINTING OFFICE 1980 660-639

TYPING GUIDE SHEET

```
             !--CATCHMENT TITLE
             !  CITY-STATE-CATCHMENT NAME-CATCHMENT CODE
             !
             !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++
!            !                                         !
!            !                                         !
!           1-60                                       !
!                                                      !
!                                                      !
!                                                      !
!            FORMAT--( 60A1 )                          !
!                                                      !
!                                                      !
!                                                      !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Figure VI-2. Title Card for Raw Data File

10/80

EPA Form 2350-4 (4-80)
TYPING GUIDE SHEET

```
    ! --NUMBER OF EVENTS IN THE FILE
    !
    !       !--NUMBER OF QUALITY PARAMETERS
    !       !
    !       !       ! --NUMBER OF RAINGAGES
    !       !       !
    !       !       !        !--TYPE OF CATCHMENT
    !       !       !        !
    !       !       !        !     !--TYPE OF RAINGAGE
    !       !       !        !     !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
!   !       !       !        !     !                     !
!   !       !       !        !     !                     !
!  5-9     14-18   23-27    36    42-45                  !
!                                                        !
!                                                        !
!                                                        !
!           FORMAT --- ( 3(4X,I5), 8X,A1,5X,A4 )         !
!                                                        !
!                                                        !
!                                                        !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Figure VI-3. Key to Rainfall-Quality Information in Catchment File

EPA Form 2350-4 (4-80)
(PREVIOUSLY CIN. EPA FORM 287)
TYPING GUIDE SHEET

```
             !---STORET PARAMETER CODE
             !   16 FIELDS ACROSS THE CARD
             !
             !
++++++++++++++++++++++++++++++++++++++++++++++++
!            !                                 !
!            !                                 !
!           1-5                                !
!                                              !
!                                              !
!                                              !
!                 FORMAT --- 16I5              !
!                                              !
!                                              !
!                                              !
++++++++++++++++++++++++++++++++++++++++++++++++
```

Figure VI-4. Non(Flow and Raingage) STORET Codes in Catchment File

EPA Form 2350-4 (4-80)
[PREVIOUSLY CIN. EPA FORM 337]
TYPING GUIDE SHEET

The sequence is parameter information record, parameter value records, parameter information record, parameter value record... The parameter information records contain information about the parameter value records for one STORET code in one event in the file. They list the location code of the catchment, the event number of the file(each file has its events ordered by date), the year the data values were measured, the STORET parameter code, and the number of parameter values measured for the STORET code during the event. The format for this record can be seen in Figure VI-5. An example is record 7 of Figure VI-1. The parameter value records contain the measured values and the times of measurement for the STORET code on the previous parameter information card. The format for this record type is shown in Figure VI-6. An example can be seen in Figure VI-1, record numbers 8-32.

In addition to the quality parameters in a file there is flow(cfs) and rainfall(either cumulative or intensity) for every event. Every catchment does not have quality parameters, but every catchment has one flow parameter(STORET code 61) and at least one raingage parameter. There is only one type of raingage parameter per catchment. No catchment will have both cumulative and intensity raingages.

Listed along with the quality parameters on records 2-4 are some quantity parameters such as STORET code 132 -- Dry Days. They are treated the same as the STORET quality parameters, except for the catchment area. See record 6-7 in Figure VI-1 for an example of STORET code 53 -- Catchment area in acres. The catchment area is the first parameter listed in the first event of all files. It is not listed in subsequent events unless the catchment area changes over time - as it does in the Houston, Texas catchments. Dry Days is listed in the event if a measured value is known, but it often is unknown.

PUNCHED DATA

Decimal points are always punched, and no scaling of the data is done. All values are instantaneous values at the given time except for rainfall, for which the value given is an average intensity over the time interval beginning at the indicated time. In most instances though, cumulative rainfall depth is given to avoid calculation of intensities over varying time intervals.

Coliforms and streptococci values are treated differently because their range (1 to 10**9) is greater than the seven-

EPA Form 2360-4 (4-80)
(PREVIOUSLY CIH. EPA FORM 237)
TYPING GUIDE SHEET

```
!--STATE MNEMONIC
!
!         !--CITY CODE-ARBITRARY, NUMERIC
!         !
!         !        !-CATCHMENT CODE-ARBITRARY, NUMERIC
!         !        !
!         !        !      !--EVENT NUMBER OF FILE
!         !        !      !
!         !        !      !       !--YEAR
!         !        !      !       !
!         !        !      !       !      !--STORET PARAMETER CODE
!         !        !      !       !      !
!         !        !      !       !      !        !--NUMBER OF PARAMETER
!         !        !      !       !      !        !  VALUES TO FOLLOW ON
!         !        !      !       !      !        !  PARAMETER VALUE CARDS
!         !        !      !       !      !        !
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
!  !         !        !      !       !      !        !                      !
!  !         !        !      !       !      !        !                      !
!  *         *        *      *       *      *        *                      !
! 1-2       3-4      5-6   16-18   24-25  38-42    56-60                    !
!                                                                           !
!                                                                           !
!                                                                           !
!         FORMAT --- (3A2,9X,I3,5X,I2,12X,I5,13X,I5)                        !
!                                                                           !
!                                                                           !
!                                                                           !
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Figure VI-5. Parameter Information Record

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EPA Form 2350-4 (4-80)
(PREVIOUSLY CIN. EPA FORM 287)
U.S. GOVERNMENT PRINTING OFFICE 1980-650-636
TYPING GUIDE SHEET

```
    !--MONTH-----------------------------------------------!
    !                                                      !
    !      !--DAY                                          !
    !      !                                               !
    !      !     !--HOUR                                   !
    !      !     !                                         !
    !      !     !      !--MINUTE                          !--FIVE FIELDS
    !      !     !      !                                  !     ACROSS
    !      !     !      !       !--TENTH OF MINUTE         !    THE CARD
    !      !     !      !       !                          !
    !      !     !      !       !      !--PARAMETER        !
    !      !     !      !       !      !   VALUES          !
    !      !     !      !       !      !                   !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
!   !      !     !      !       !      !                   !
!   !      !     !      !       !      !                   !
!   *      *     *      *       *      *                   !
!  1-2    3-4   5-6    7-8      9    10-16                 !
!                                                          !
!                                                          !
!                                                          !
!           FORMAT --- 5(4I2,I1,F7.0)                      !
!                                                          !
!                                                          !
!                                                          !
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

Figure VI-6. Parameter Value Record

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EPA Form 2350-4 (4-80)
(PREVIOUSLY CIN. EPA FORM 281)
U.S. GOVERNMENT PRINTING OFFICE: 1980-660-628
TYPING GUIDE SHEET

character field width of the data values. Hence, all such data are entered on the cards as 100 * log(10) (MPN/100ml). (The multiplier of 100 is used to provide extra significant figures.) Users should be careful to remember this when reading the tape.

ACCESS AND USE

The emphasis of this project was not upon the formulation of a sophisticated storage and retrieval system for the management of the data base. Rather, it was to obtain and document as much data as possible. Hence, the 'data base' itself is merely a magnetic tape containing records of the type shown in Figure VI-1. On the tape, rainfall-runoff-quality data are grouped by event and by catchment with one catchment per tape file. There are a total of 73 catchments for this edition of the data base report.

Data may be utilized for comparison with modeling results simply by obtaining a listing via a 'dump' utility of the tape contents. Alternatively, only selected parameters may be retrieved from the tape if desired. The tape itself may be utilized for statistical analyses and characterization purposes, although in practice such manipulations will be better served after having placed the data onto a rapid-access storage device.

The statistical tables presented in section X of this report are also available on the magnetic tape. File 90 contains the event statistics and summary statistics. File 91 contains only the summary statistics, (these are the Tables in Section X.) File 92 contains the non-tabular form of the quality event statistics. File 93 contains the non-tabular form of the quantity event Statistics. File 94 contains the measured and interpolated values of the quality parameters and corresponding flow values. The descriptions of all the data files and statistics files can be obtained along with the magnetic tape from the University of Florida.

The data have also been entered directly into the STORET system. This should facilitate nationwide access and permit the use of STORET software for statistical and other analyses. The data on STORET can be retrieved by the programs listed in the STORET manual(30).

SECTION VII

DESCRIPTION OF RAINFALL-RUNOFF-QUALITY DATA BASE SOURCES

INTRODUCTION

The following subsections describe locations for which rainfall, runoff and quality data have been obtained that are suitable for the data base. Additional locations with rainfall-runoff data only are described in Section VIII.

Sources included in this section were chosen primarily on the basis of known high quality of the data, availability and documentation. The first consideration was checked primarily by familiarization with the sampling program, careful review of the documentation and personal conversations with the responsible personnel. The latter two considerations were the keys to actually obtaining, reducing (in some cases), key punching, etc. the data for inclusion on the magnetic tape. Since UF is distant from most of the sources, the only way in which these operations could be accomplished was to have good documentation provided in some form. In all cases, data values were inspected visually for reasonableness. Where data were key punched at UF, spot checks were made against the source listing.

Each location has tables describing the catchments, quantity sampling program, quality sampling program, quality data sampled, and, in a few cases, additional information. Similar tables for different locations differ in content according to the available information at each location. In all cases, additional useful information may be obtained from the cited references.

The amount of modeling data contained in-house by UF varies considerably from location to location and is increasing with time. Requests should be made directly to UF to the persons indicated below for information on data for individual catchments.

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University of Florida
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(904)392-0846

BROWARD COUNTY, FLORIDA

The Water Resources Division of The Miami Office of the U.S. Geological Survey (USGS) initiated monitoring of stormwater runoff at three sites with different land uses in northeast Broward County (Fort Lauderdale area) in 1974 in cooperation with the county and the Florida Department of Transportation (104, 105). In addition to the extensive amount of quality sampling being done, an added advantage of this program is that all quality data are being placed directly into the STORET system, and are thus accessible by many users. Flow and rainfall data are not in the STORET files and were obtained by UF directly from USGS. Early data have been used for model comparisons (172).

All quality data were retrieved from STORET and placed in the same format as other data on the data tape. Further data will be added to the data tape as they become available. Overall, these data are among the very best included in the data base, in terms of volume, care in sampling, sophistication of instrumentation and accessibility.

Recent references make the data all the more useful. A complete data tabulation for the residential, transportation and commercial sites is given in references 190-192, respectively. The instrumentation and data management systems are described in references 193-194. Further study information and modeling efforts are presented in references 195-197. Results of a statistical analysis of residential and transportation site data are summarized in reference 198. Finally, one of the most valuable contributions from the study is a report documenting basin characteristics for model purposes (199). Containing maps, drainage plans, photos, and tabulations of pertinent data, it is an excellent adjunct to the data themselves. It also contains information on a fourth, multifamily residential site in Dade County.

State and City Code: FL 01

Table VII-1. Catchments - Broward County

No	Name	Area,ac (ha)	IA,ac[g] (ha)	HEIA,ac[h] (ha)	Drainage System	STORET Location ID	Land Use
1	Residential (near NE 31 St. and US1)[a][b]	40.8 (16.5)	17.9 (7.2)	2.41 (1.0)	Storm[f]	261615080055900	House roofs, 19%; drive ways; 9%;roads 11%; lawns, 61%.
2	Transportation (Sample Rd. near I-75)[b]	58.3 (23.6)	21.1 (8.5)	10.5 (4.2)	Storm	261629080072400	Arterial Highway[d] (does not include interstate hwy. drainage).
3	Commercial (Coral Ridge Shopping Plaza, near NE 35 St. and US1)[c]	20.4 (8.3)	20.0 (8.1)	20.0 (8.1)	Storm	261002080070100	Shopping Center[e].

[a] - Population 351, estimated using 151 single family houses.

[b] - North of Pompano Beach, Florida.

[c] - In north Ft. Lauderdale, Florida.

[d] - Roadway and connected parking lots 13.7 ac (5.6ha), permeable lawns 24.3 ac (9.8ha) and rooftops 1.0 ac (0.4ha).

[e] - Pavement 19.7 ac (8.0ha), vegetation 0.4 ac (0.16ha) and rooftops draining to sewer 8.3 ac (3.4ha).

[f] - Open-channel, swale drainage.

[g] - Impervious Area.

[h] - Hydraulically Effective Impervious Area.

Table VII-2. Quantity Data - Broward County

		Flow		Rain					
				Gages Used					
No	Catchment	Type of Flow Measurements	Sampling Interval min	No. in Catch.	No. near Catch.	Type	Sampling Interval min	No. of Storms	Period
1	Residential	f_1	1	3	0	r_1	1	74	4/74-9/75
2	Transportation	f_1	1	2	0	r_1	1	108[a]	4/75-4/77
3	Commercial	f_1	1	1	0	r_1	1	113	5/75-12/76

f_1 - Fiberglass U-shaped, venturi-type constriction mounted in 36 in. (914 mm), 54 in. (1372 mm). and 36 in. (914 mm) pipes at sites 1, 2 and 3, respectively. Calibrated in laboratory. Stage measured by nitrogen gas bubbler tube.

r_1 - Weather Measure Model P-501 tipping bucket gage; bucket capacity = 0.01 in. (0.25 mm).

[a] - Not every gage has the same number of storm events.

Time synchronization, flow-rain: Excellent since data are telemetered to same multiple pen strip chart recorder.

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Table VII-3. Quality Sampling - Broward County

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
1	Residential	s_1	1-15	Outfall Pipe	74	4/74-9/75
2	Transportation	s_1	1-15	Outfall Pipe	108	4/75-4/77
3	Commercial	s_1	1-15	Outfall Pipe	113	5/75-12/76

s_1 - USGS continuous flow automatic sampler 2ℓ (0.53 gal.) bottles.

Time synchronization, flow-quality: Good since time of sample noted on same strip chart recorder as used for rain-flow.

Table VII-4. Quality Parameters - Broward County

Not all parameters are available for all storms at all catchments

Parameter	STORET Code	Units
Temperature	10[a]	°C
Stage	65[a]	ft
Turbidity	70	JTU
Color	80	PCU
Conductivity	95	µmho
Dis. Oxygen	300[a]	mg/1
DO, % Saturation	301	%
BOD_5	310	mg/1
COD low level	335	mg/1
COD High Level	340	mg/1
pH	400	
CO_2	405	mg/1 as CO_2
Tot. Alkalinity	410	mg/1 as $CaCO_3$
HCO_3 ion	440	mg/1 as HCO_3
CO_3 ion	445	mg/1 as CO_3
Tot. Solids	500	mg/1
Dis. Solids	515	mg/1
Residue, Total Nonfiltrable	530	mg/1
Tot. N	600	mg/1-N
Tot. Organic N	605	mg/1-N
NH_3-N	610	mg/1-N
NO_3-N	620	mg/1-N
TKN	625	mg/1-N
NO_2 + NO_3-N	630	mg/1-N
Tot. P	665	mg/1-P
Tot. Organic C	680	mg/1-C
Tot. Inorganic C	685	mg/1-C
Tot. C	690	mg/1-C
Sodium Na, Total	929	mg/1
Potassium K, Total	937	mg/1
Cl	940	mg/1
Dis. Silica	955	mg/1 as SiO_2
Arsenic As, total	1002	µg/1
Cd, total	1027	µg/1
Cr, total	1034	µg/1

[a] No values yet stored on STORET file.

Table VII-4. Quality Parameters - Broward County (Concluded)

Parameter	STORET Code	Units
Cu, total	1042	µg/l
Fe, total	1045	µg/l
Pb	1051	µg/l
Zn, total	1092	µg/l
Tot. Colif.	31501	MPN/100 ml[a]
Fec. Colif.	31616	MPN/1oo ml[a]
Fec. Strep.	31679	MPN/100 ml[a]
Susp. Solids by evap @ 180°C	70299	mg/l
OPO_4-P	70507	mg/l-P
Tot. N as NO_3	71887	mg/l as NO_3
Sample source BM	72005	

[a] - On data tape, coliforms reported as 100 x $\log_{10}$ (MPN/100 ml).

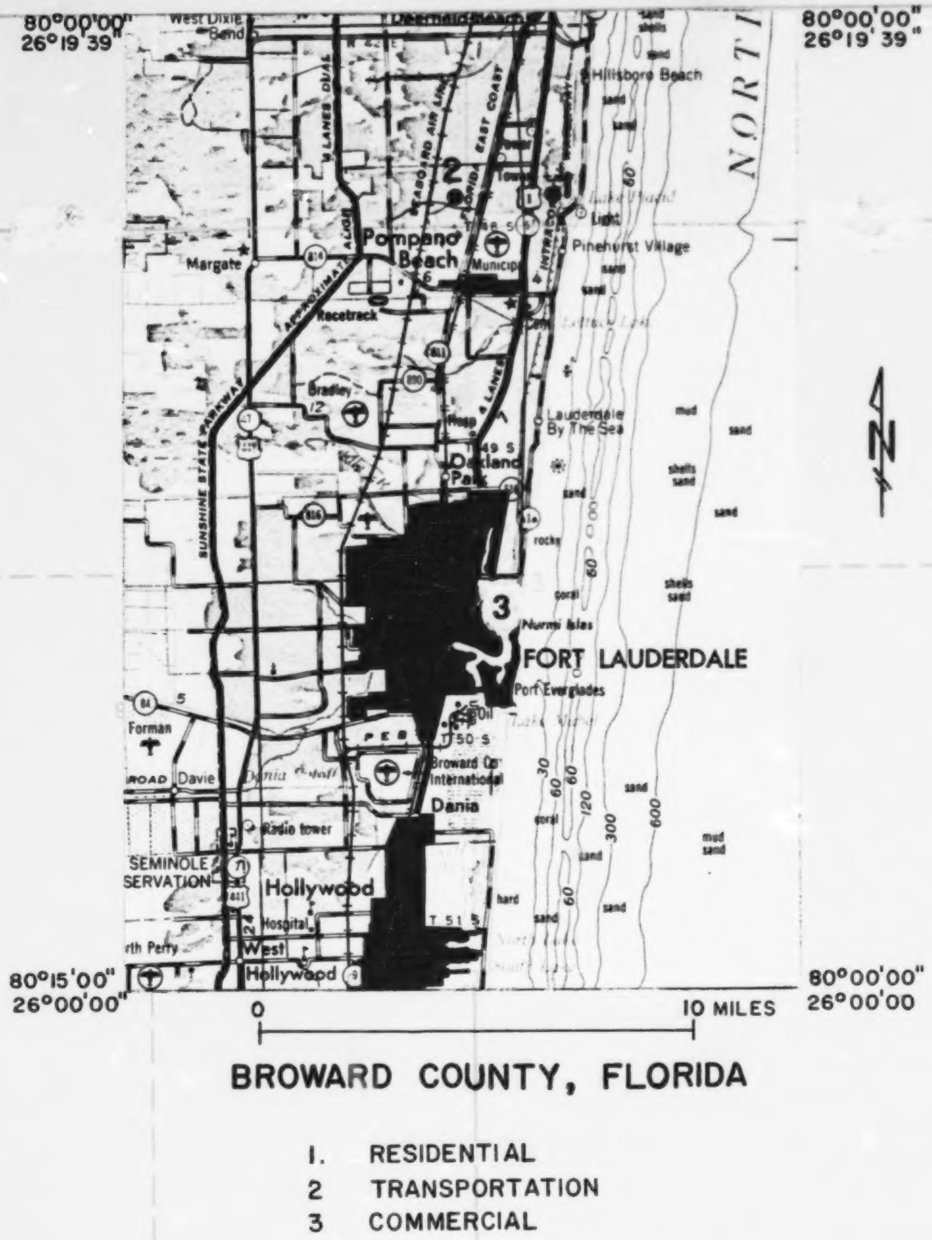

Figure VII-0. Location map for Broward County catchments.

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EPA-287 (Cin.)
(4-76)

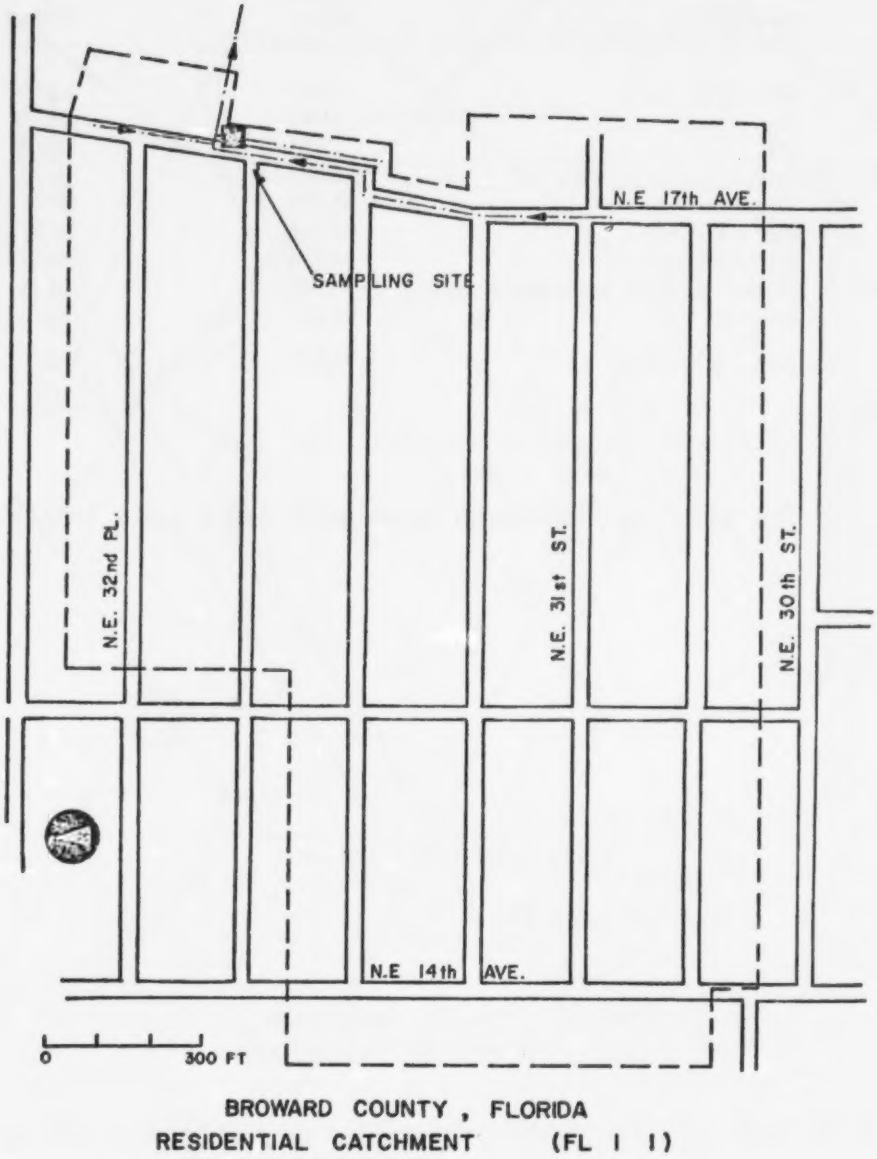
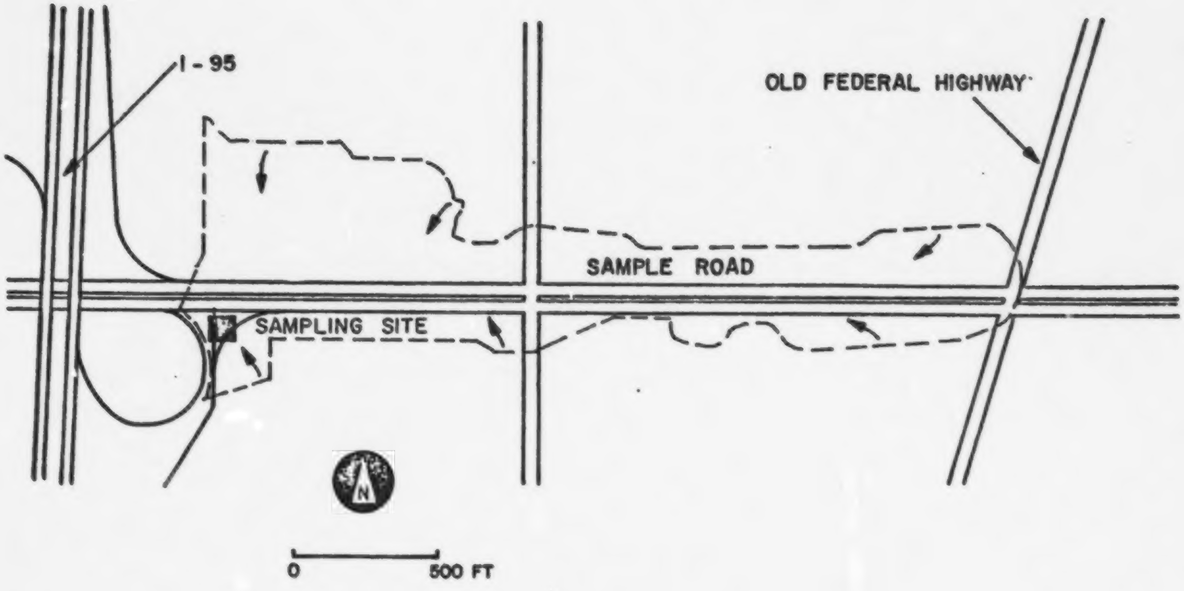


Figure VII-1 Broward County, Florida, Residential Catchment, 47.5 ac (19.2 ha)



BROWARD COUNTY, FLORIDA
TRANSPORTATION CATCHMENT (FL I 2)

Figure VII-2 Broward County, Florida, Transportation Catchment, 39.0 ac (15.8 ha). Scale is approximate.

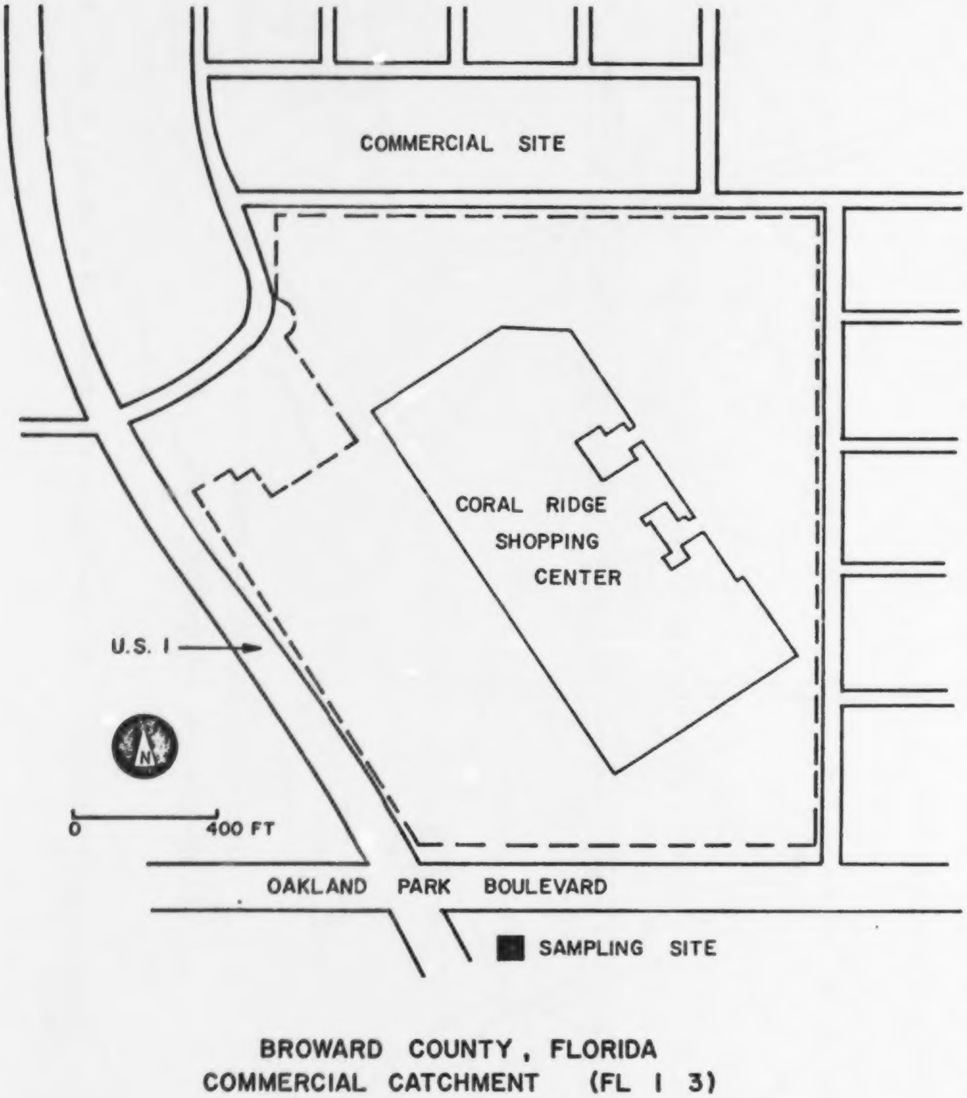


Figure VII-3 Broward County, Florida, Commercial Catchment, 28.4 ac (11.5 ha). Scale is approximate.

DURHAM, NORTH CAROLINA

The 1069 ac (433 ha) Third Fork Basin in Durham has been monitored for rainfall-runoff data by the USGS as reported by Tucker (42). The RRL and ILLUDAS models were tested on these data (49,50), and keypunched rainfall-runoff data for 1969 were received through the courtesy of the Illinois State Water Survey. These data have also been used for hydrograph analyses (176).

Quality sampling was performed in 1969 by Bryan (133,134) and in 1971-1973 by Colston (135). Bryan's data were in the form of composite samples and are not included in the data base. Of the several storms sampled by Colston, rainfall data are reported for four and included herein. Colston's report (135) also contains useful catchment information and examples of SWMM modeling. All data for the catchment are considered to be good due to the careful processing of rainfall-runoff data by the USGS and analysis of the quality data by Colston. However, measurements of BOD_5 were not reproducible, and it was Colston's recommendation that they not be used as an indicator of water quality. In addition, due to the fact that the quality samples were taken from the bottom, suspended solids measurements may not be representative of the entire vertical solids profile.

State and City Code: NC 02

Table VII-5. Catchments - Durham

No.	Name	Area ac (ha)	Sewerage	Population	Imperviousness %	Ave. land Slope, %	Land Use Percentages
1	Third Fork	1069 (433)	Storm (open channels)	6400	29[a]	7.6	Res. 24, com. and ind. 19, public and institutional 12, open 10.

[a] Paved 20%, rooftops 9, unpaved streets 3, vegetation 68.

Table VII-6. Quantity Data - Durham

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Third Fork	f_1	5	1	-	r_1	5	15	6/69-2/70
								4	6/72-10/72

f_1 - Continuous stage measurement at V-notch weir, connected to digital tape punch recorder. USGS station no. 02097243.

r_1 - Float-type rain gage with punched record.

Time synchronization: Good since rain gage and stage gage use same clock.

Table VII-7. Quality Sampling - Durham

No.	Catchment	Sampling Method	Sampling Interval min.	Sampling Location	No. Storms	Period
1	Third Fork	s_1	12 - 30	Basin outlet at USGS weir	4	6/72-10/72

---

s_1 - Pumped to Serco Model NW-3 automatic sampler, modified slightly as described by Colston (135). Sample volume was 0.35 1. Inlet pump was anchored near stream bed immediately below weir.

Time synchronization , flow-quality: Good since USGS and quality sampling clocks were housed in same facility and could be cross checked.

Table VII-8. Quality Parameters - Durham

Not all parameters are given for all storms.

Parameter	STORET Code	Units
BOD_5	310	mg/1
COD	340	mg/1
Dis. COD	341	mg/1
pH	400	mg/1
Tot. Alaklinity	410	mg/1 as $CaCO_3$
Tot. Solids	500	mg/1
Tot. Vol. Solids	505	mg/1
Suspended Solids	530	mg/1
Vol. Susp. Solids	535	mg/1
TKN	625	mg/1 - N
Tot. P	665	mg/1 - P
Tot. Organic C	680	mg/1 - C
Ca	916	mg/1
Mg	927	mg/1
Cr	1034	µg/1
Cu	1042	µg/1
Fe	1045	µg/1
Pb	1051	µg/1
Mn	1055	µg/1
Al	1107	µg/1
Fec. Coliform	31616	MPN/100ml[a]

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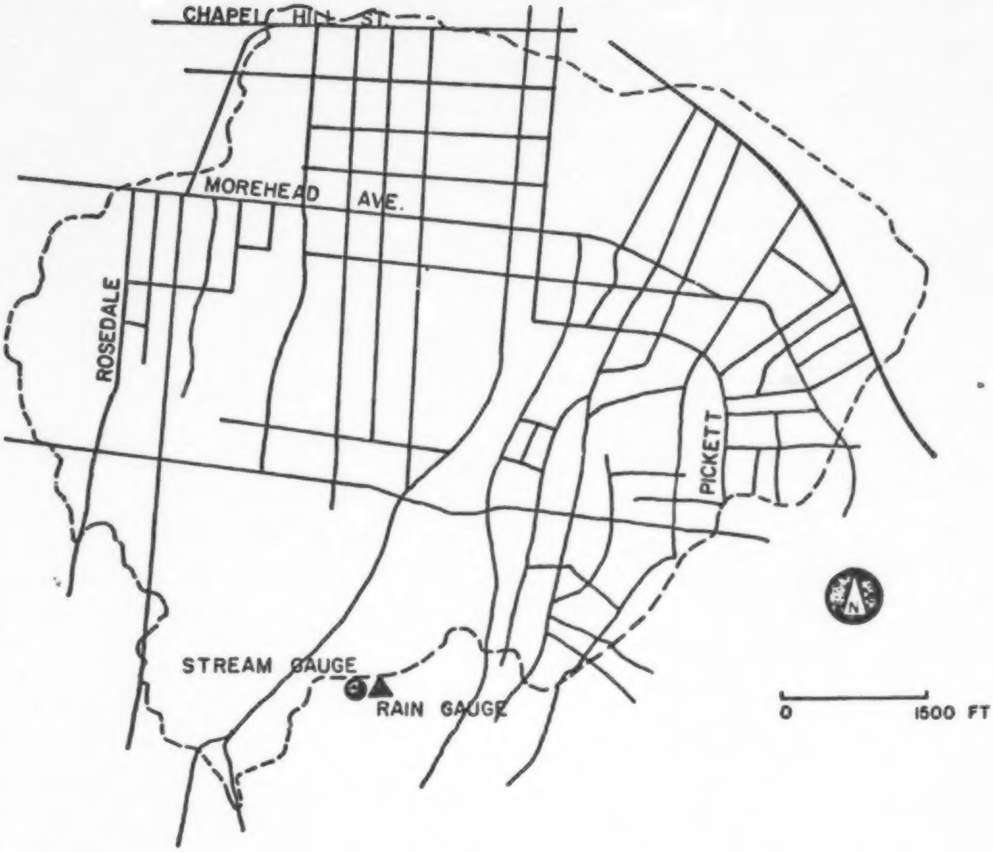
[a] On data tape, coliforms reported as 100 x $\log_{10}$ (MPN/100ml).

Cobalt, nickel and strontium were also measured but all values were less than the detection level of 100 µg/1.



DURHAM , N. C.

THIRD FORK CATCHMENT

(NC 2 1)

Figure VII-4 Durham, N.C., Third Fork Catchment, 1069 ac (433 ha).

LANCASTER, PENNSYLVANIA

Data were taken from the 134 acre (54.2 ha) Stevens Avenue catchment as part of the Swirl Regulator Demonstration Project (EPA Grant S802219, formerly 11023 GSC) being undertaken at that location. In preparation for construction of a swirl regulator/concentrator at the Stevens Avenue outfall to Connestoga Creek, monitoring was performed in 1973-74 by the City of Lancaster and Meridian Engineering of Philadelphia. As a participant in the project, the University of Florida received data on a routine basis and has used the combined-sewered Stevens Avenue catchment as a study area in a previous report (106).

All data were collected and analyzed by the city; however, depth, pH, DO, conductivity and temperature were reduced directly from the original strip charts by UF. Rainfall data were similarly reduced by UF from xerox copies of the charts. Quality data are felt to be good at this location. Flow data are not as good since they were obtained using Manning's equation to convert measured depths. However, supercritical flow at the measuring point eliminates any backwater effects.

The automatic depth gage recorded values at 18 sec intervals. When the data were reduced for conversion to flows (and inclusion on the Data Base tape), these values were weighted by $AR^{2/3}$ where A is the cross sectional area and R is the hydraulic radius at the given depth, and five adjacent values were averaged to provide 1.5 min, weighted averages. Even using this procedure, computed flows are highly variable and may change by over 100 cfs (2.8 m^3/sec) in one time step, owing to the steep, "flashy" character of the catchment. Since rainfall data are available at only a 5 min interval, hydrologic model calibration with these data is difficult.

State and City Code: PA 01

Table VII-9. Catchments - Lancaster

Name	Area ac (ha)	Population	Drainage System	DWF cfs (1/sec)	Ave Runoff Coef	Land Use
1. Stevens Avenue	134 (54.2)	3900	Combined	0.6-0.9 (17-25)	0.59	Single-family res., 90% Multi-family res., 10%

Table VII-10. Quantity Data - Lancaster

	Flow		Rain					
			Gages Used					
Catchment	Type of Flow Meas	Sampling Interval min	No. in Catchment	No. near Catchment	Type	Sampling Interval min	No. Storms	Period
Stevens Avenue	f_1	1.5	1	0	r_1	5	6	9/73 - 1/74

---

f_1 - Depth measurement in 60 in. (152 cm) RCP sewer by Controlotron Corp 290-1 sonic water level sensor. Continuous strip chart records at depth were converted to flow by UF using Manning equation, n = 0.013, slope = 0.035 (note that flow is supercritical). Measured depths are also given in data tabulation.

r_1 = Weighing bucket raingage at Hand JHS. 24-hour strip charts.

Time synchronization, rain-flow: possible errors due to separate clocks.

Table VII-11. Quality Sampling - Lancaster

Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
Stevens Avenue	s_1	1.5-60	Diversion Structure	6	9/73 - 1/74

---

s_1 - pH, conductivity, DO, temperature by Ohmart Corp Model 1-1000-D probe sensor. Recorded on Westronic multiple-pen strip chart along with depth measurment. Other parameters by Sonford Model HG-4 automatic sampler (connected to Ohmart sampler pumps) into 2 liter (0.53 gal) bottles.

Time synchronization, flow-quality: good because data recorded on same strip chart.

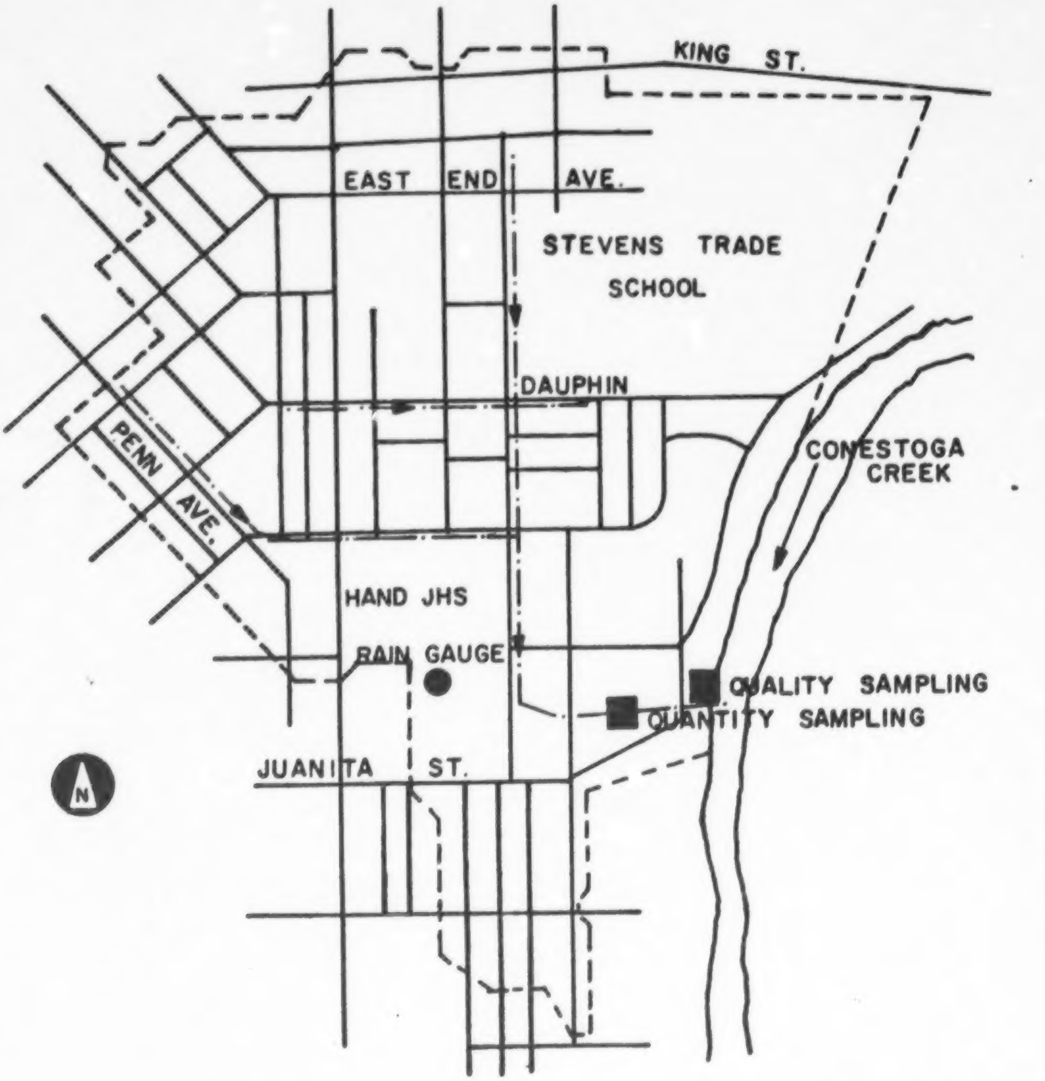
Table VII-12. Quality Parameters - Lancaster

Not all parameters are given for all storms.

Parameter	STORET Code	Units
Conductivity (probe)	94	μ mhos
Dis. Oxygen (probe)	299	mg/l
pH (probe)	400	
Temperature (probe)	11	°F
Sus. Solids (SS)	530	mg/l
Fixed SS	540	mg/l
Vol. SS	535	mg/l
Dis. Solids	515	mg/l
Tot. Solids	500	mg/l
BOD_5	310	mg/l
BOD_{20}	324	mg/l
COD	340	mg/l
TOC	680	mg/l
Tot. Cd	1027	μg/l
Tot. Cr	1034	μg/l
Tot. Cu	1042	μg/l
Tot. Pb	1051	μg/l
Tot. Zn	1092	μg/l
Chloride	940	mg/l
Tot. Org. N	605	mg/l-N
NH_3-N	610	mg/l-N
NO_3-N	620	mg/l-N
NO_2-N	615	mg/l-N
OPO_4-P	70507	mg/l-P
Tot. P	665	mg/l-P
Hydroliz. P	669	mg/l-P
Depth[a]	50055	in.
Flow[a]	61	cfs
Rain	90050	in./hr

Grease/oil, total coliforms and fecal coliforms were listed as part of the sampling program, but no data were given for the storms used.

[a] Depths and flows are averages of 5 values over a 1.5 min interval, reported at the center of the interval. Depths are weighted by $AR^{2/3}$ as described in the text.



LANCASTER, PA.

STEVENS AVENUE CATCHMENT (PA I 1)

Figure VII-5 Lancaster, Pennsylvania, Stevens Ave. Catchment, 134 ac (54.2 ha).

LINCOLN, NEBRASKA

Quantity and quality data were gathered for the three residential catchments as part of OWRT-sponsored research conducted by the University of Nebraska. The period of study was April 1972 to May 1974.

Data were taken from a thesis (107) and completion report (56) and reduced prior to receipt by UF. Additional information on rainfall was received from R. Sallach (personal communications, 1975, 1976). These data are considered to be of good quality, on the basis of discussions with University of Nebraska personnel.

State and City Code: NB 01

Table VII-13. Catchments - Lincoln

No.	Name	Area ac (ha)	Sewerage	Population	Imperviousness (%)	Length of Streets mi (km)	Land Use
1	39th & Holdrege	79 (32)	Storm[c]	822[a]	30		Residential
2	63rd & Holdrege	85 (39.4)	Storm[c]	391[b]	36-40	4.3 (6.9)	Residential
3	78th & A St.	357 (145)	Storm[c]		25		Developing residential, open, farm

---

[a] 1952 population. Estimated 1975 population density = 11.3 persons/ac (27.9 persons/ha).

[b] 1952 population. Estimated 1975 population density = 7.9 persons/ac (19.5 persons/ha).

[c] Open channels.

Table VII-14. Quantity Data - Lincoln

	Flow		Rain					
Catchment	Type of Flow Meas	Sampling Interval min	Gages Used No. in Catchment	Gages Used No. near Catchment	Type	Sampling Interval min	No. Storms	Period
39th & Holdrege	f_1	10-15	1	0	r_1	15-90	20	4/72 - 5/74
63rd & Holdrege	f_2	10-15	0	1	r_1	15-90	15	4/72 - 5/74
78th & A St.	f_3	10-15	1	0	r_1	15-90	14	4/72 - 7/73

---

f_1 - Visual head measurement on sharp-crested rectangular weir in open channel 20 ft (6.1 m) downstream of 48 in. (1220mm) concrete sewer.

f_2 - Visual readings of depth markings on wall of 48 in. (1220mm) sewer. Converted to flow using Manning's equation.

f_3 - Visual readings of markings on wall of 5 x 10 ft(1.5x3.6m) concrete box culvert in open drainage ditch. Velocity measurements used to develop stage-discharge relationship.

r_1 - Standard USGS recording rain gages with seven day clock.

Time synchronization: Rain-flow dependent upon different clocks. Possibility of occasional time shift between flow and rainfall measurements.

Comment: Time sequence of rainfall is poorly defined for many storms due to reduction of data over long time periods (e.g., rainfall totals reported at 90 min intervals for some storms).

Table VII-15. Quality Sampling - Lincoln

No.	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
1	39th & Holdrege	s_1	10-15	At weir downstream of 48 in. (1220 mm) sewer	20	4/72 - 5/74
2	63rd & Holdrege	s_1	10-15	At outlet of 48 in. (1220mm) sewer	15	4/72 - 5/74
3	78th & A St.	s_1	10-15	In box culvert in open drainage ditch	14	4/72 - 5/74

---

s_1 - Manual grab samples.

Time synchronization, flow-quality: good since both kinds of data recorded simultaneously at same point.

Table VII-16. Quality Parameters - Lincoln

Not all parameters were recorded for all storms at all locations.

Parameter	Catchment No.	STORET Code	Units
BOD_5	All	310	mg/l
COD	All	340	mg/l
VSS	All	535	mg/l
TS	All	500	mg/l
TVS	All	505	mg/l
SS	All	530	mg/l
NO_3-N	All	620	mg/l-N
Org-N	All	605	mg/l-N
OPO_4-P (Soluble)	All	671	mg/l-P
Spec. Conductivity	All	95	μ mho
Turbidity	All	70	JTU
Tot. Colif.	All	31503	MPN/100 ml[a]
Salinity	All	480	ppt

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[a] Note: On data tape, coliforms are given as 100 x $\log_{10}$ (MPN/100 ml)

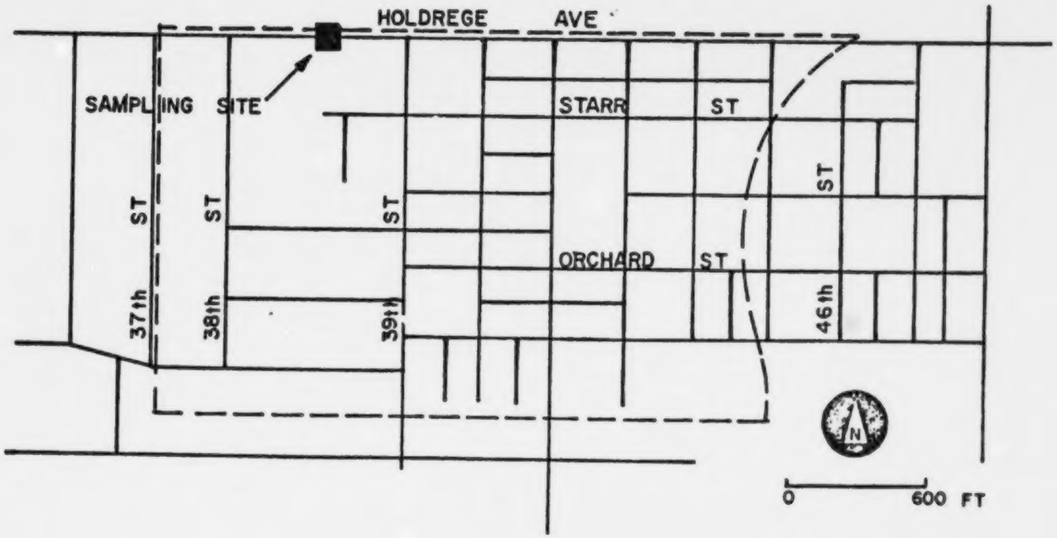
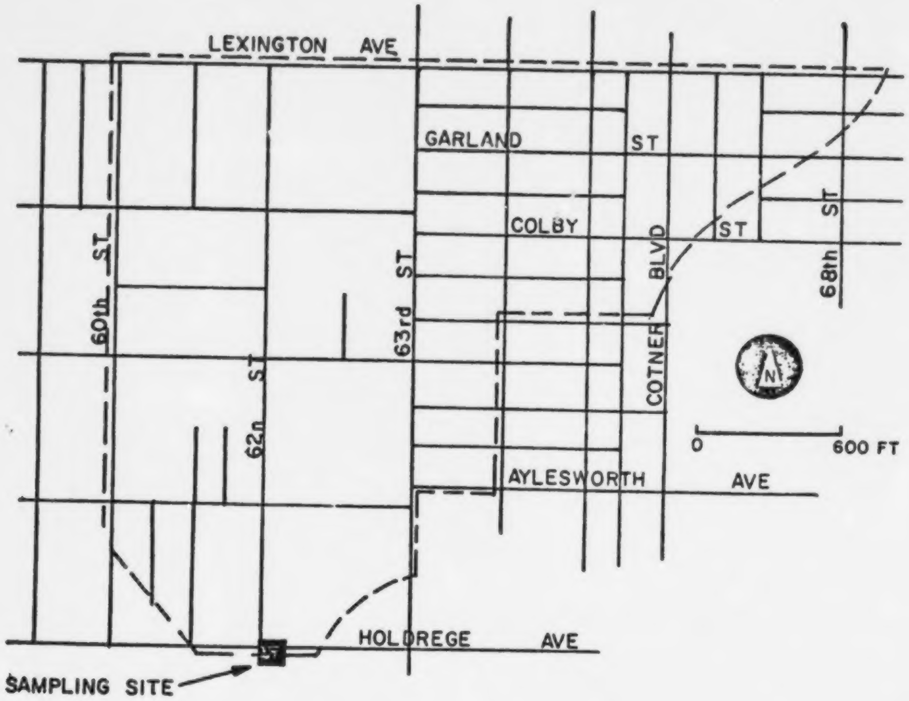


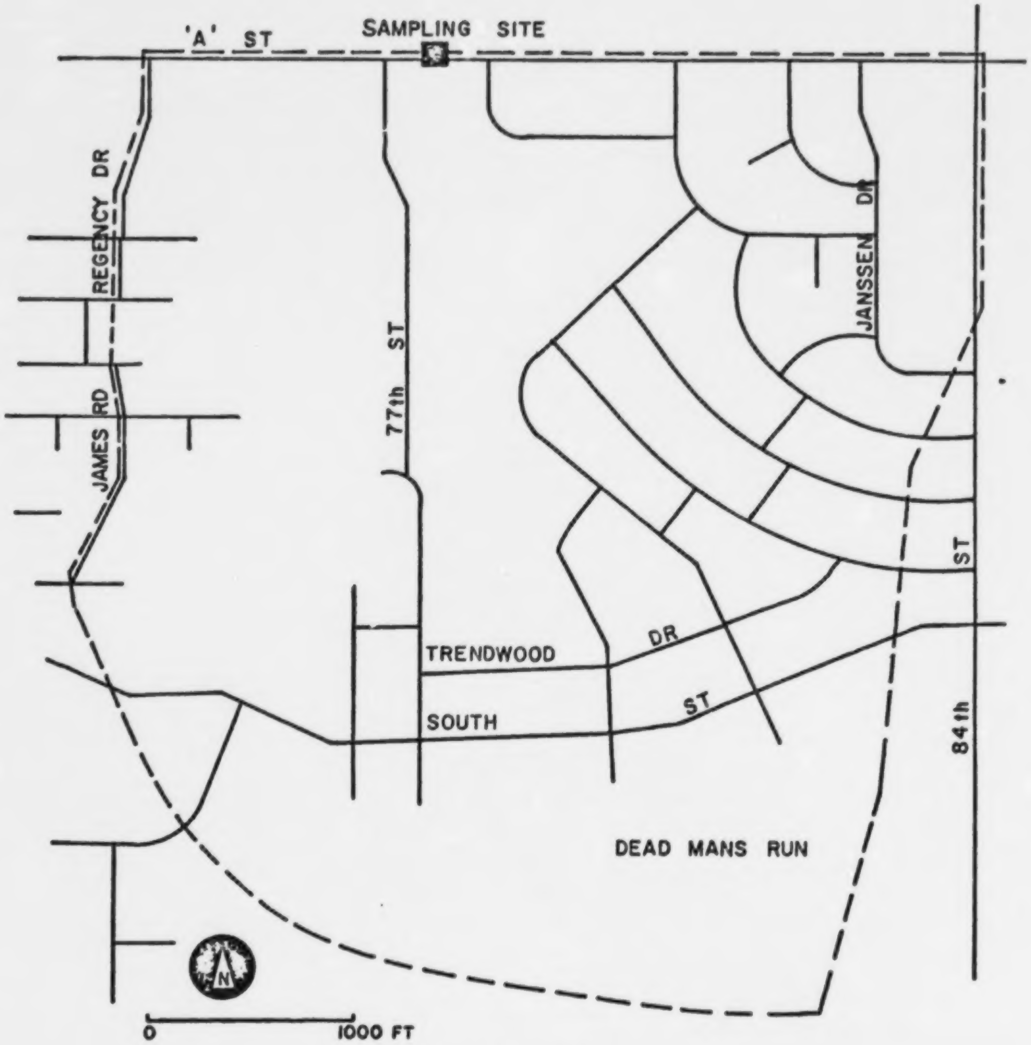
Figure VII-6 Lincoln, Nebraska, 39th and Holdrege Catchment, 79 ac (32 ha). Scale is approximate.



LINCOLN, NEBRASKA

63rd AND HOLDREGE CATCHMENT (NB I 2)

Figure VII-7 Lincoln, Nebraska, 63rd and Holdrege Catchment, 85 ac (39.4 ha). Scale is approximate.



LINCOLN , NEBRASKA
78th AND 'A' ST CATCHMENT
(NB 1 3)

Figure VII-8 Lincoln, Nebraska, 78th and 'A' St. Catchment, 357 ac (195 ha). Scale is approximate.

RACINE, WISCONSIN

Data were taken from a draft report (108) of a detailed study performed by Envirex, Inc. involving an extended monitoring program. The flow data are somewhat difficult to interpret since runoff from the catchment is split between two outlets, Site I and Site II, and difficulties were experienced in flow measurements at Site II. Thus, proper interpretation of the Site I runoff data must rely upon accurate analysis of upstream diversion structures. It is understood that this information will be contained in the final version of the report. All data are taken from the draft report and were reduced prior to to receipt by UF. Additional quality parameters beyond the three included herein were also monitored and will be included in the data base at a future date.

State and City Code: WI 01

Table VII-17. Catchments - Racine

No.	Name	Area ac (ha)	Population	Sewerage	Land Use Percentages
1	Site I	829.3 (335.8)	9847[a]	Combined	Single Fam. Res. 63, Multi-Fam. Res. 10, Com. 12, Ind. 9, Park 6

---

[a] Population of residential land use only.

Table VII-18. Quantity Data - Racine

	Flow		Rain					
			Gages Used					
Catchment	Type of Flow Meas	Sampling Interval min	No. in Catchment	No. near Catchment	Type	Sampling Interval min	No. Storms	Period
Site I	f_1	10	2	1	r_1	5	9	7/73 - 8/74

---

f_1 - At Site I, total flow is sum of pumped flow to treatment plant, measured by Parshall flume, plus weir overflow, determined by bubbler tube measurement of stage at diversion structure. Stage measurements in Parshall flume were variable, hence results are given in terms of a range (minimum and maximum) at each time step.

r_1 - Bendix, weighing bucket recording gages. Value reported is from the one out of three sites selected for modeling of the particular storm.

Time synchronization: flow-rain, dependent upon separate clocks on rain and stage gages. Possibility of time shifts between two sets of data. No problems reported.

Comment: In the reference report flow was recorded at two sites in the catchment. Data in this report is only for Site I since there were many problems with the accuracy of Site II. When comparing with modeling results, characteristics of flow dividers upstream from Sites I and II must be considered since total runoff from catchment is split between Sites I and II.

Table VII-19. Quality Sampling - Racine

No.	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
1	Site I	s_1	10-30	Wet well at lift station to treatment plant	7	11/73 - 8/74

---

s_1 - grab samples.

Time synchronization: flow-quality, good since data gathered simultaneously at same location.

Table VII-20. Quality Parameters - Racine

Not all parameters are available at all times for all storms.

Parameter	STORET Code	Units
BOD_5	310	mg/1
SS	530	mg/1
Tot. Colif.	31501	MPN/100 ml[a]

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[a] On data tape, coliforms are given as 100 x $\log_{10}$ (MPN/100 ml).

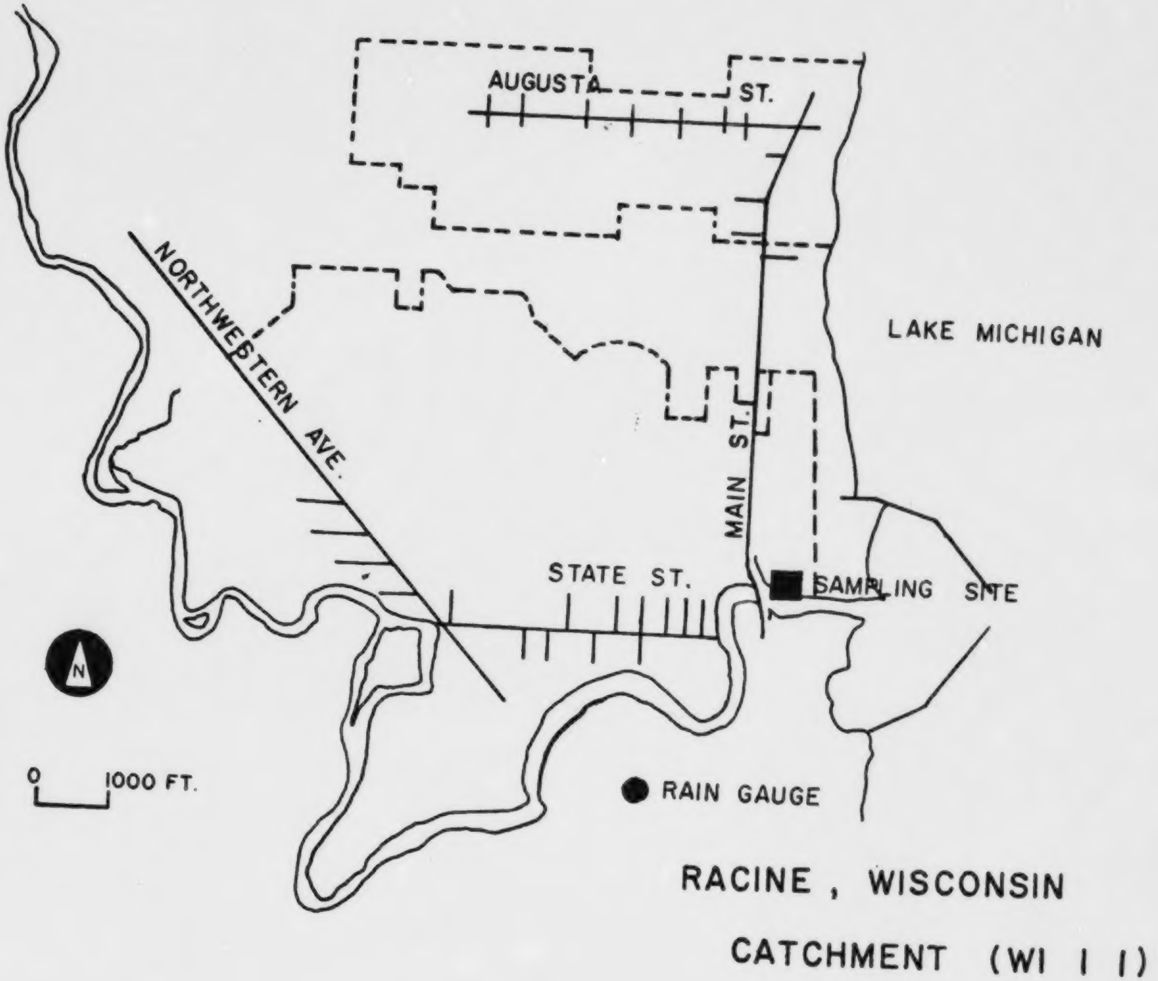

Figure VII-9 Racine, Wisconsin, Site I Catchment, 829 ac (336 ha).

SAN FRANCISCO, CALIFORNIA

Flow and quality data included in the report were collected by Engineering Science, Inc., for the City of San Francisco during 1966-70(34,35,175). Six catchments were monitored in the study, five mainly residential and one mainly industrial. Although the volume of data (i.e., number of storms sampled) is small, the data themselves are considered good and represent one of the earlier efforts in monitoring overflow points for later model calibration.

All data were acquired and reduced by the staff of Engineering Science and are taken directly from their reports. They have been used previously for model verification (102,143-145,178). All rainfall values included on the data tape were read from graphs since no tabulation was provided.

The City of San Francisco instituted in 1972 an extensive network of tipping-bucket rain gages and bubbler stage measurements throughout the City. These data are stored on several hundred magnetic tapes by the City but have not been reduced to a convenient form for modeling to date.

State and City Code: CA 01

Table VII-21. Catchments - San Francisco

No.	Name	Area ac (ha)	Sewerage	Popu-lation	No. Catch-basins	Streets, mi (km)	Land Use Percentages
1	Baker St.	168 (68)	Combined	13,200	140	8.75 (14.0)	Res 80, Com 8, Vac 12
2	Mariposa St.	223 (90)	Combined	4,500	145	8.45 (13.5)	Res 29, Ind 36, Vac 14,Other 21
3	Brotherhood Way	180 (73)	Combined	5,100	114	11.6 (19.6)	Res 77, Com 6 Govt 11, Other 6
4	Vicente St., North	16 (6.5)	Storm	400[a]	12[a]	1.32 (2.1)	Res 100
5	Vicente St., South	21 (8.5)	Storm	500[a]	15[a]	1.64 (2.6)	Res 80, Com 15, Other 5
6	Selby St.	3400 (1380)	Combined	81,000	2300	136 (217)	Res 77, Com 2, Ind 6, Vac 15
7	Laguna St.	375 (152)	Combined	25,300	250	17.2 (27.5)	Res 62, Com 16, Ind 6, Other 16

---

[a] Estimated

Table VII-22. Quantity Data - San Francisco

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of Flow Meas	Sampling Interval min	No. in Catchment	No. near Catchment	Type	Sampling Interval min	No. Storms	Period
1	Baker St.	f_1	5-10	1	Fed Bldg	r_1	10	3	4/69 - 11/69
2	Mariposa St.	f_1	5-10	1	Fed Bldg	r_1	10	3	2/69 - 4/69
3	Brotherhood Way	f_1	5-10	1	Fed Bldg	r_1	10	3	1/70
4	Vicente St., N	f_1	5-10	1		r_1	10	1	2/70
5	Vicente St., S	f_1	5-10	1		r_1	10	1	2/70
6	Selby St.	f_2	5-10	1	Fed Bldg	r_1	10	8	11/69 - 3/67
7	Laguna St.	f_3	5-10	1		r_2	5-10	2	3/67

f_1 - Dye dilution, using pumped dye inflow 500-700 ft (150-210 m) upstream from diversion structure. Reported flows corrected for assumed flow into interceptor.

f_2 - Depth measurement at outfall structure. Stage-discharge calibration over weir. Interceptor blocked during storms, so reported flows are overflows over weir. A volume of approximately 5.3×10^5 ft^3 (1.5×10^4 m^3) in overflow structure and trunk sewer must be filled at beginning of storm prior to overflow.

f_3 - Depth measurement in sewer outfall, converted to flow by Manning equation. Flows apparently uncorrected for "small" amount diverted to interceptor during storms.

r_1 - Unspecified recording raingage. Rainfall measured at Federal Building by US Weather Service occasionally used, but not indicated as to which storms.

r_2 - Homemade gage using graduated cylinder, read at fixed time intervals.

Time synchronization: dependent on different clocks in different gages. Possibility of occasional time shift between flow and rainfall measurements.

Table VII-23. Quality Sampling - San Francisco

No.	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
1	Baker St.	s_1	≥ 10	Above diversion structure	3	4/69 - 11/69
2	Mariposa St.	s_1	≥ 10	Diversion structure	3	2/69 - 4/69
3	Brotherhood Way	s_1	≥ 10	Above diversion structure	3	1/70
4	Vicente St., North	s_1	≥ 10	Diversion structure	1	2/70
5	Vicente St., South	s_1	≥ 10	Diversion structure	1	2/70
6	Selby St.	s_2	≥ 10	Diversion structure	8	11/66 - 3/67
7	Laguna St.	s_3	≥ 10	Outfall below diversion structure	2	3/67

s_1 - Pumped to sample bottle from intake on bottom of sewer. About 10 sec required to fill bottle.

s_2 - Mechanical sampler traverses flow from top to bottom over about a two minute interval. Provides depth integrated sample. Final sample composited from three samplers at outfall.

s_3 - Manual grab samples taken in sewer outfall.

Time synchronization: quality-flow good at all locations since both measurements made simultaneously at same point.

Table VII-24. Quality Parameters - San Francisco

Not all parameters are given for all storms at all catchments

Parameter	Catchment No.	STORET Code	Units
COD	All	340	mg/l
BOD_5	All	310	mg/l
Floatables	All	90055	mg/l
Grease (Hex Extract)	All	70351	mg/l
Set. Solids	1-5	545	ml/l
Set. Solids @ 30 min	6,7	90060	ml/l
Sus. Solids (SS)	All	530	mg/l
Vol. SS	All	535	mg/l
Particle Size Dist. % Retained on:			
74 µ filter	1-5	90065	%
14 µ filter	1-5	90066	%
5 µ filter	1-5	90067	%
0.45 µ filter	1-5	90068	%
Tot. N	1-5	600	mg/l-N
NH_3-N	All	610	mg/l-N
TKN	6,7	625	mg/l-N
OPO_4-P	1-5	70507	mg/l-P
TPO_4-PO_4	6,7	650	mg/l-PO_4
Tot. Colif.	1-5	31505	MPN/100 ml[a]
Fec. Colif.	All	31615	MPN/100 ml[a]
Spec. Conductivity	All	95	µ mho
Alkalinity	All	410	mg/l as $CaCO_3$
pH	1-5	400	
Bioassay	1-5	90069	% survival at 96 hrs
SO_4	6,7	945	mg/l-SO_4
Cl	6,7	940	mg/l
Na	6,7	929	mg/l
K	6,7	937	mg/l
Ca	6,7	916	mg/l
Mg	6,7	927	mg/l
Settled BOD	6	90064	mg/l
Vol. Set. Solids	6	544	mg/l
Settled COD	6	90063	mg/l
Toxicity	1-5	90070	% survival at 96 hrs
Flow	All	61	cfs
Rainfall	All	90050	in./hr

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[a] On data tape, coliforms are given as 100 x $\log_{10}$ (MPN/100 ml).

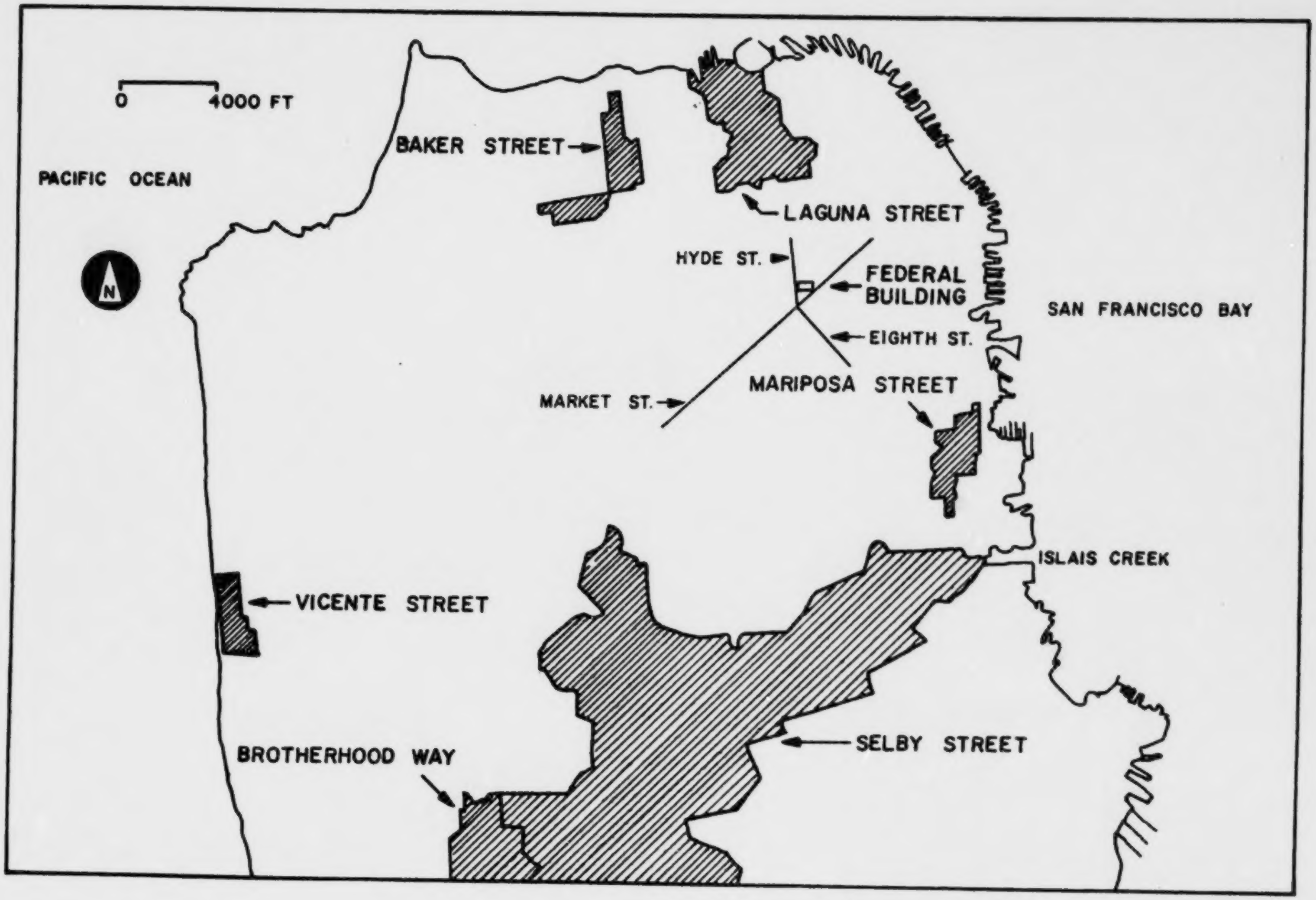


Figure VII-10 Location map for San Francisco catchments.

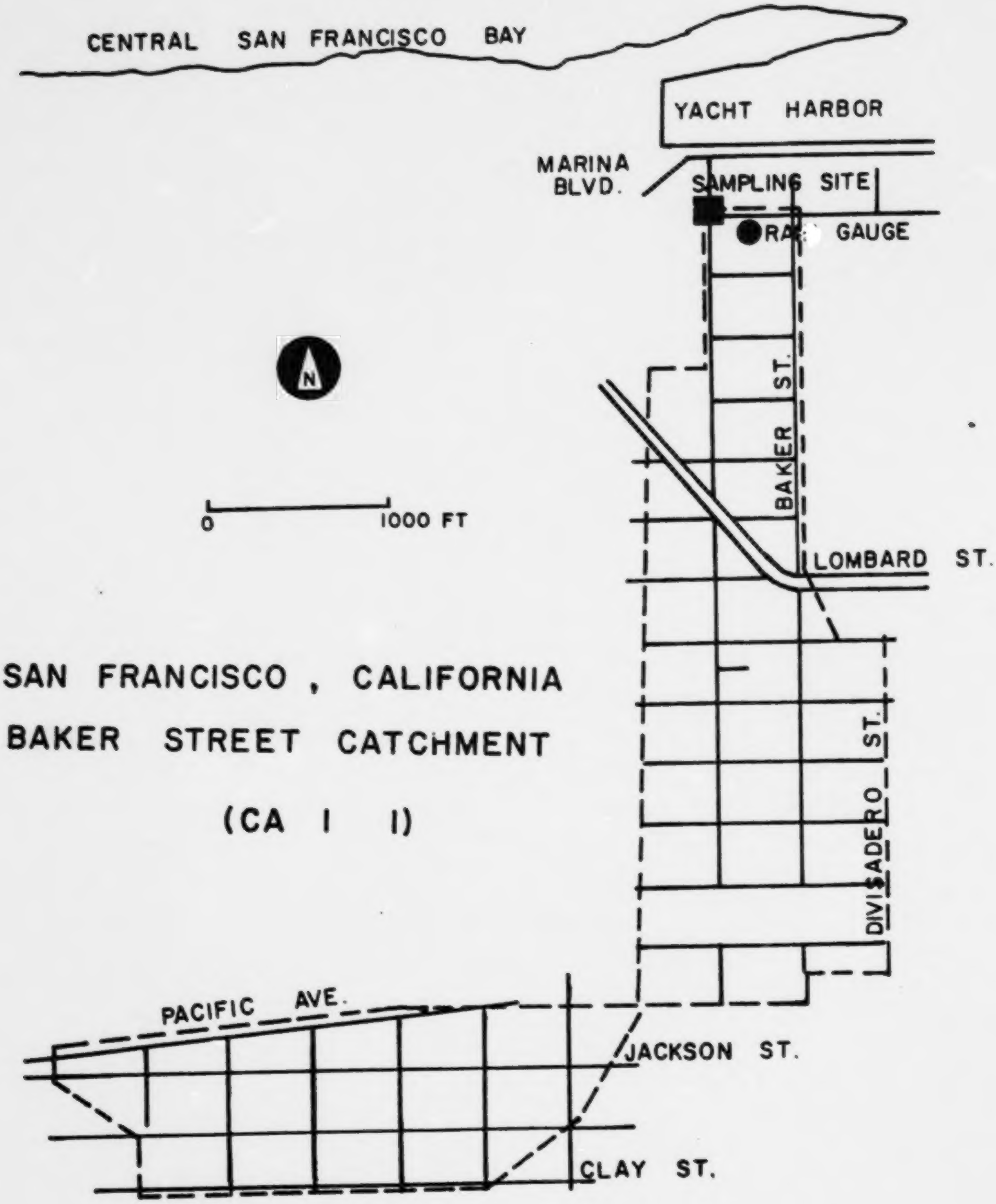
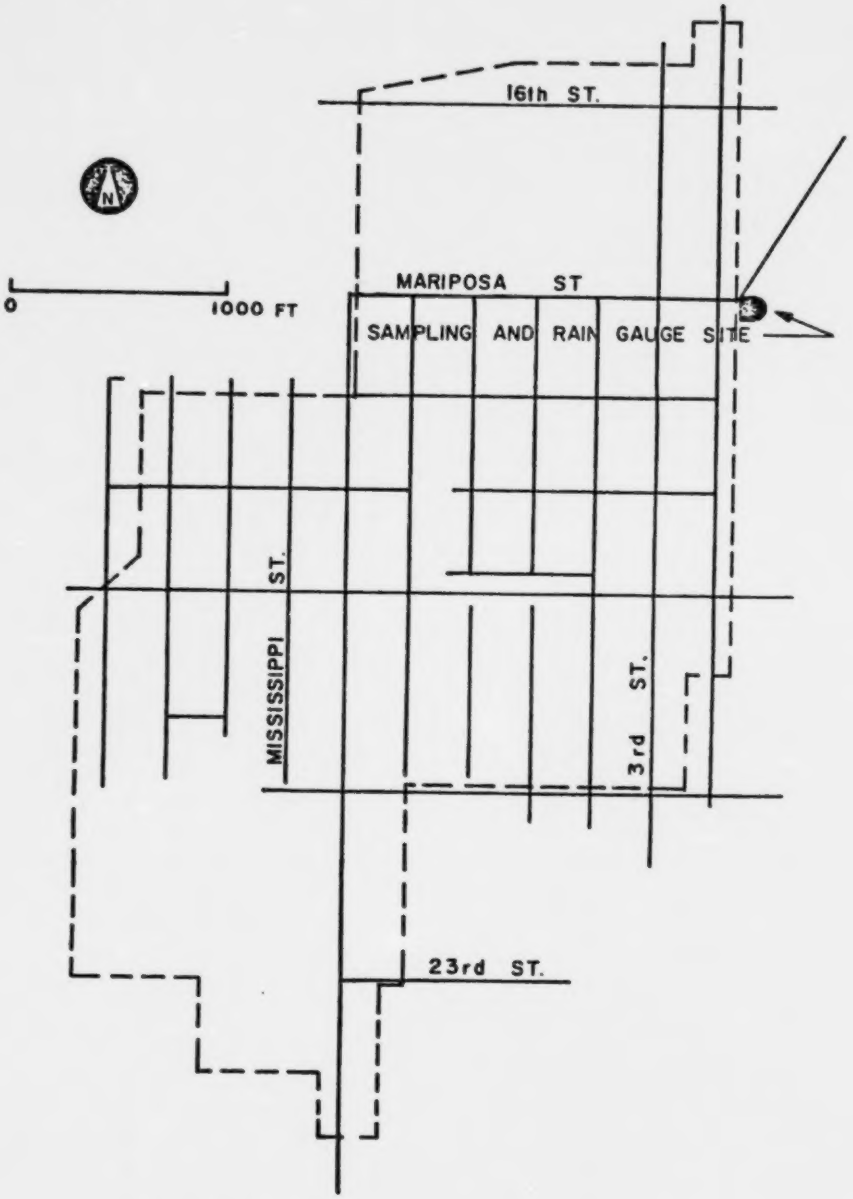
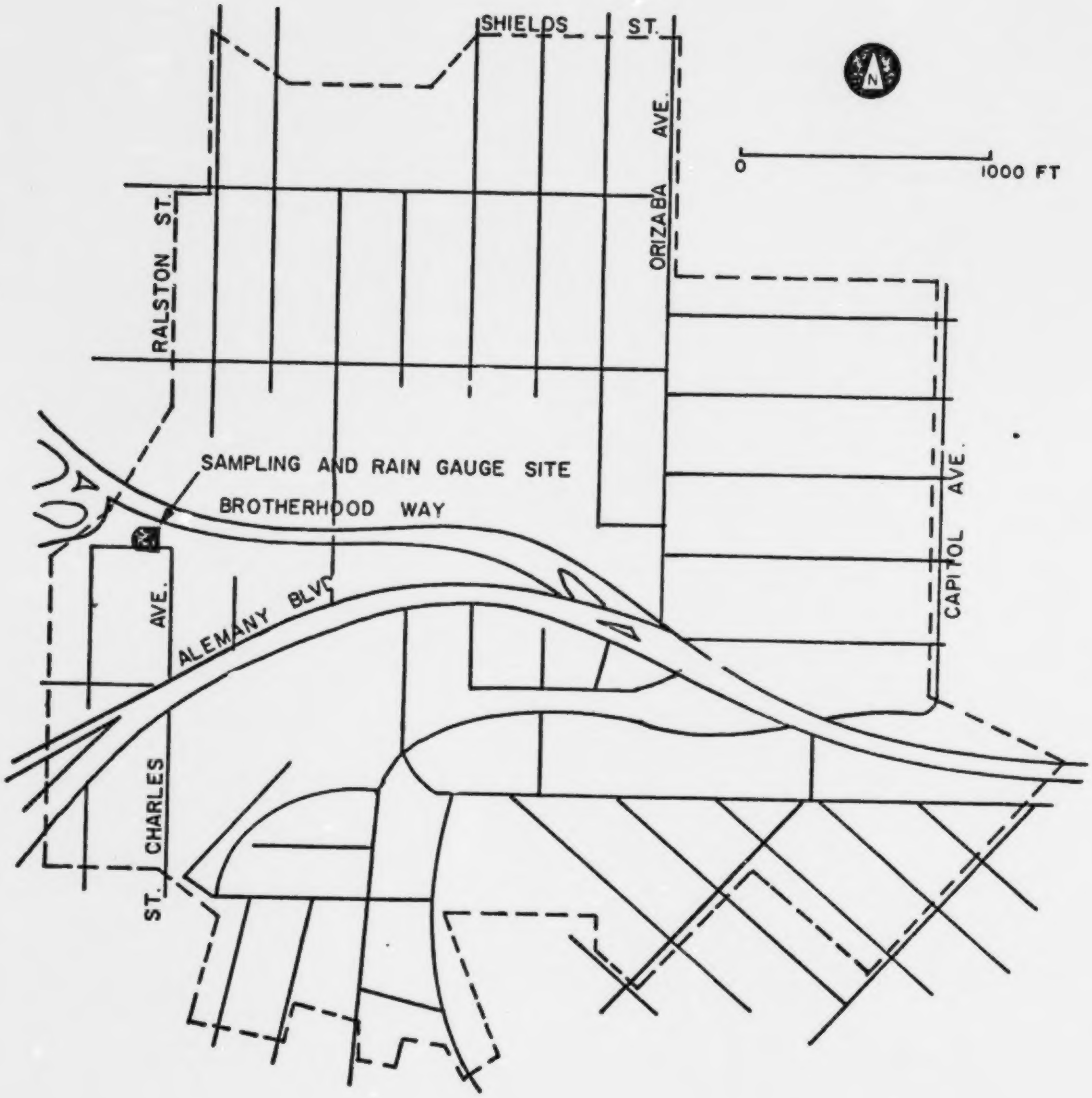


Figure VII-11 San Francisco, California, Baker St. Catchment 168 ac (68 ha)



SAN FRANCISCO , CALIFORNIA
MARIPOSA STREET CATCHMENT (CA I 2)

Figure VII-12 San Francisco, California, Mariposa St. Catchment, 223 ac (90 ha).



SAN FRANCISCO, CALIFORNIA

BROTHERHOOD WAY CATCHMENT (CA 1 3)

Figure VII-13 San Francisco, California, Brotherhood Way Catchment, 180 ac (73 ha).

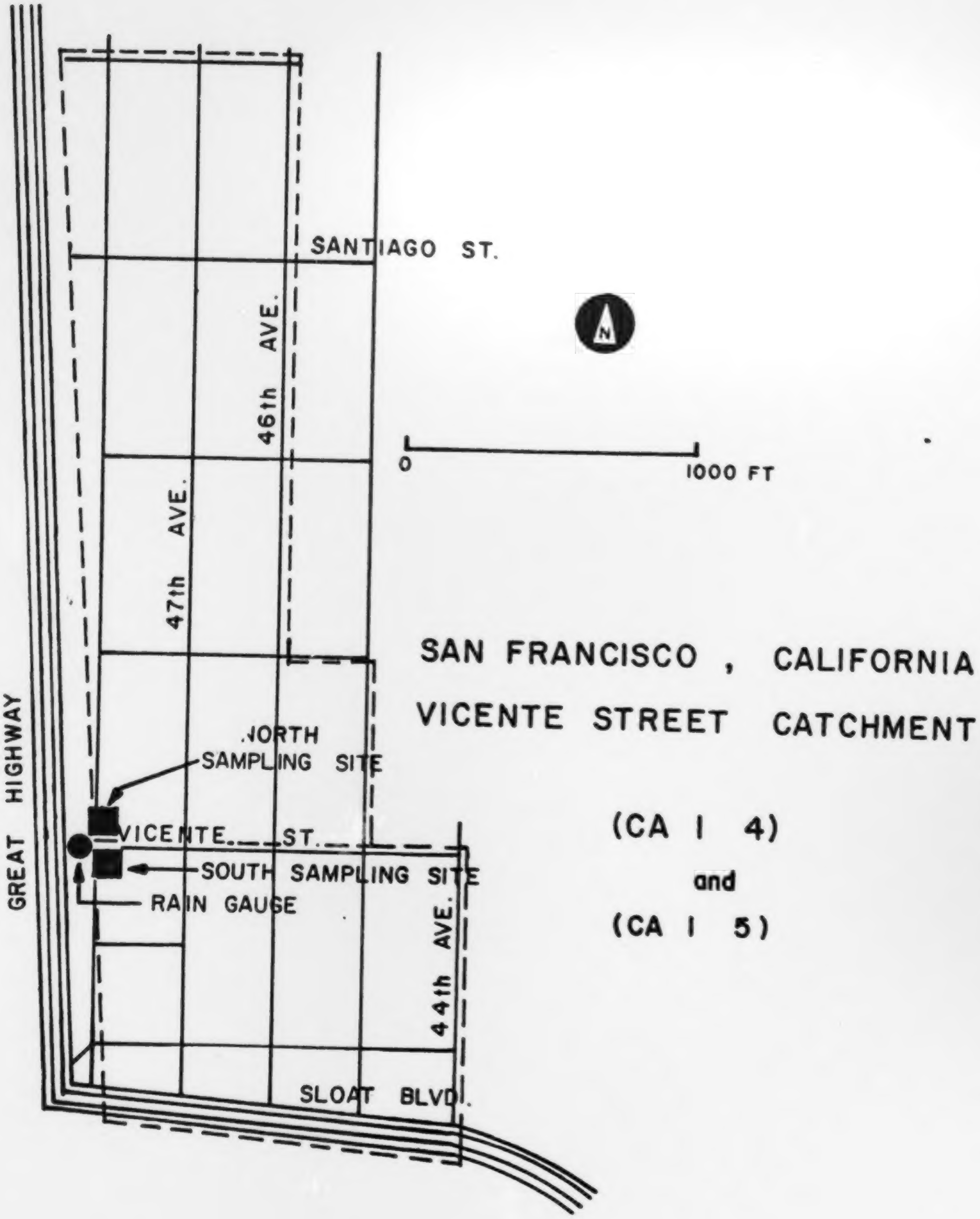


Figure VII-14 San Francisco, California, Vicente St. North Catchment, 16 ac (6.5 ha) and Vicente St. South Catchment, 21 ac (8.5 ha).

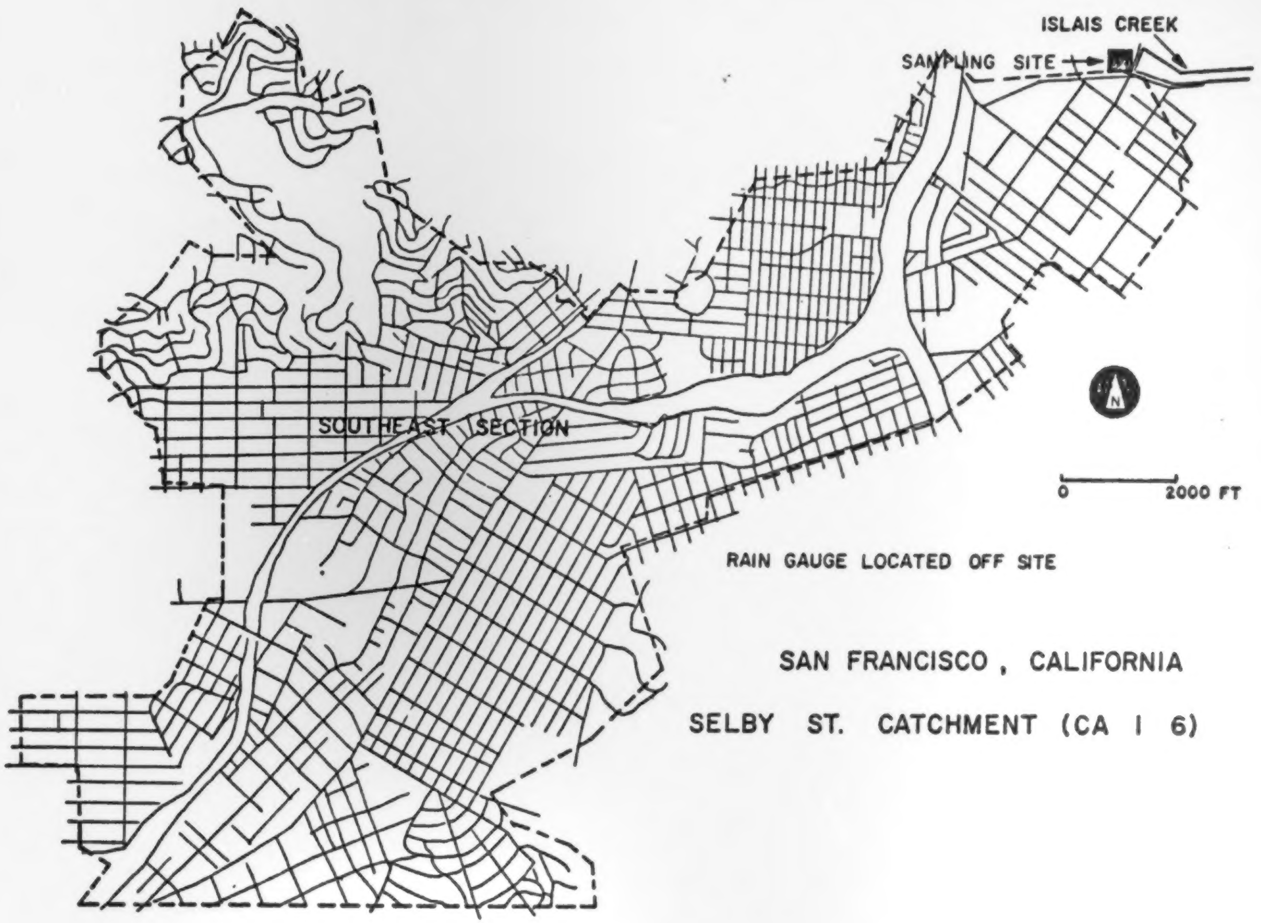
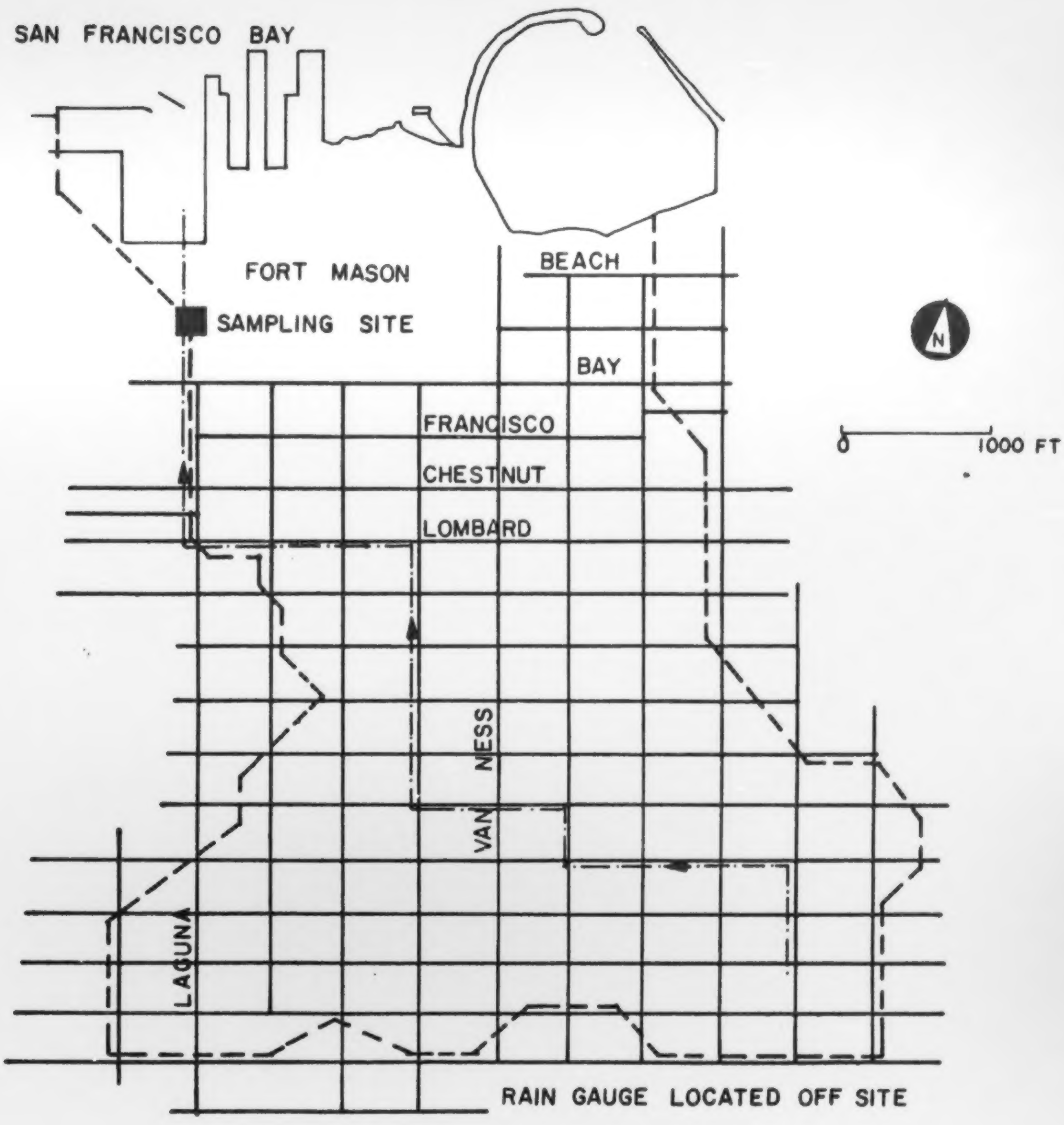

ISLAIS CREEK
SAMPLING SITE
SOUTHEAST SECTION
0
2000 FT
N
RAIN GAUGE LOCATED OFF SITE
SAN FRANCISCO , CALIFORNIA
SELBY ST. CATCHMENT (CA I 6)

Figure VII-15 San Francisco. California, Selby St. Catchment, 3400 ac (1380 ha).



SAN FRANCISCO, CALIF.

LAGUNA ST. CATCHMENT (CA I 7)

Figure VII-16 San Francisco, California, Laguna St. Catchment, 375 ac (152 ha).

SEATTLE, WASHINGTON

The data included in this report were made available by the Municipality of Metropolitan Seattle (METRO) through the River Basin Coordinating Committee, plus later data through a continuing sampling program by METRO. The data are part of an integrated study of water and wastewater management of the Cedar and Green River Basins (33, 146).

Seven catchments were sampled representing residential, commercial, and industrial land use. Data for all seven were gathered during 1973 under a cooperative arrangement between METRO and the Seattle District Corps of Engineers. Intensive sampling at three catchments has continued into 1974-75. All data, with the exception of some limited 74-75 rainfall data, were reduced by the agency prior to receipt by UF.

All Seattle data are considered excellent, both in terms of sampling procedures and volume. METRO personnel are performing extensive in-house analyses of the data to determine loading rates, statistical parameters, etc. When published, their reports should provide a valuable addition to the data themselves. Some additional information on the catchments is available in modeling studies performed for the city (109, 143).

State and City Code: WA 01

Table VII-25. Catchments - Seattle

No.	Name	Area ac (ha)	Sewerage	Land Use
1	View Ridge 1 (VR1)[a]	630 (255)	Storm	High dens., older single family residential
2	View Ridge 2 (VR2)	105 (43)	Storm	Single fam. res. 50%, multiple fam. res. 40%, com. and hosp. 10%
3	South Seattle (SS3)	27.5 (11.1)	Storm	Industrial
4	Southcenter (SC4)	24 (9.8)	Storm	New shopping center (com.)
5	Lake Hills (LH5)	150 (61)	Storm	Medium dens., newer single family residential
6	Highlands (HL6)	85 (34)	Storm	Low density, wooded, single family residential
7	Central Bus. Dist. (CBD7)	27.8 (11.3)	Combined	Older business district (com.)

---

[a] Notation used in Seattle documentation.

Table VII-26. Quantity Data - Seattle

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of Flow Meas[a]	Sampling Interval[b] min	No. in Catchment	No. near Catchment	Type	Sampling Interval min	No. Storms	Period
1	View Ridge 1	f_1	5-15	0	3	r_1	5-60	5 25	2/73- 9/73 10/74-12/75
2	View Ridge 2	f_3	5-15	1	2	r_1	5-15	5	2/73- 9/73
3	South Seattle	f_3	5-15	0	2	r_1	5-60	5 26	3/73- 9/73 10/74-12/75
4	Southcenter	f_1	5-15	1	0	r_1	5-60	6 25	2/73- 9/73 10/74-12/75
5	Lake Hills	f_2	5-15	1	1	r_1	5-15	5 2	3/73- 9/73 4/75- 6/75
6	Highlands	f_3	5-15	0	1	r_1	5-15	4	3/73- 9/73
7	Central Bus. Dist.	f_3	5-15	0	1	r_1	5-15	5	3/73- 9/73

---

[a] All flows computed from stage-discharge relationship from Manning equation, with some calibration using velocity measurements. Stage measured by Arkon Model 63 TN Nitrogen Gas Bubbler Tube.

f_1 - Recorder at hole in conduit. f_2 - Recorder at catchbasin. f_3 - Recorder at manhole.

[b] Flows were calculated every 15 min from strip chart records with linear interpolation for values reported at shorter intervals.

r_1 - Stevens tipping bucket gage and event recorder. Reported data are for gage in catchment, if working, or else nearest gage in direction of approaching storm.

Time synchronization, rain-flow: dependent upon separate clocks in rain and stage gages. No problems reported.

Comment: Early problems in flow measurements developed at Southcenter, Lake Hills and Highlands due to unusually high velocities creating a venturi effect as water rushed past the bubbler tube. Weirs were installed on April 23-24, 1973 to reduce velocities, and calibrations changed accordingly. Flow data are considered very good, in general.

Table VII-27. Quality Sampling - Seattle

No.	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
1	View Ridge 1	s_1	15	Flow-measuring site	5 25	2/73- 9/73 10/74-12/75
2	View Ridge 2	s_2	15	Flow-measuring site	5	3/73- 9/73
3	South Seattle	s_1	15	Flow-measuring site	5 26	3/73- 9/73 10/74-12/75
4	Southcenter	s_1	15	Flow-measuring site	5 25	2/73- 9/73 10/74-12/75
5	Lake Hills	s_2	15	Flow-measuring site	5 2[a]	3/73- 9/73 4/75- 6/75
6	Highlands	s_2	15	Flow-measuring site	4	3/73- 9/73
7	Central Bus. Dist.	s_2	15	Flow-measuring site	5	3/73- 9/73

---

[a] Only quality data are a few measurements of total P.

s_1 - Manual grab samples in 2 gal (7.6 l) bottles (1973 storms). Most 1974-75 storms used Serco automatic samplers.

s_2 - Manual grab samples in 2 gal (7.6 l) bottles.

Time synchronization, flow-quality: good since flow measured at same location as quality sampling.

Table VII-28. Quality Parameters - Seattle

Not all parameters are given for all storms at all catchments.

Parameter	Catchment No.	STORET Code	Units
DO	All	300	mg/1
pH	All	400	
Temperature	All	10	°C
Susp. Solids (SS)	All[a]	530	mg/1
BOD_5	All	310	mg/1
COD	All	340	mg/1
Cd	All[a]	1027	μg/1
Cr	All	1034	μg/1
Cu	All	1042	μg/1
Pb	All[a]	1051	μg/1
Zn	All[a]	1092	μg/1
Cl	All	940	mg/1
NH_3-N	All[a]	610	mg/1-N
NO_2-N	All	615	mg/1-N
NO_2-N + NO_3-N	All[a]	630	mg/1-N
TKN	All	625	mg/1-N
Organic-N	1,3,4[a]	605	mg/1-N
Fec. Colif.	All	31616	MPN/100 ml[b]
Tot. Colif.	All	31501	MPN/100 ml[b]
Tot. Hydroliz. P	All	669	mg/1-P
Tot. P	1,3,4[a]	665	mg/1-P
OPO_4-P	All[a]	70507	mg/1-P
Conductivity	All[a]	94	μ mho/cm
Turbidity	All[a]	70	JTU
Grease (Hex Extract)	All	70351	mg/1
Tot. Dis. Solids	All	515	mg/1
Set. Solids (at 1 hr)	All	546	mg/1
SO_4	All	945	mg/1
Fe	All	1045	μg/1
Hg	All	71900	μg/1
As	All	1002	μg/1
Flow	All[a]	61	cfs
Rain	All[a]	90050	in./hr
Dry Days Preceding Storm[c]	1,3,4	90100	days
Catchment Area[c]	1,3,4	53	acres
Storm Rainfall[c]	1,3,4	45	in.

---

[a] Only parameters measured when using automatic samplers during 1974-75 storms

[b] On data tape, coliforms are given as 100 x $\log_{10}$ (MPN/100 ml).

[c] Also provided on data tape for 1974-75 storms.

Table VII-29. Background Levels at Three Catchments - Seattle

Limited samples were taken in 1976 to determine background levels of parameters during periods of no rain. These may be used as initial conditions at the initiation of storms. They also are subject to refinement at a future date.

Parameter	STORET Code	Concentration at Catchments 1 (VR1)	 3 (SS3)	 4 (SC4)	Units
Tot. P	665	0.15	0.11	0.22	mg/1-P
OPO_4-P	70507	0.09	0.1	0.14	mg/1-P
Organic-N	605	0.44	0.40	0.80	mg/1-N
NH_3-N	610	0.06	0.08	0.16	mg/1-N
NO_2 + NO_3-N	630	2.3	0.1	0.35	mg/1-N
Susp. Solids (SS)	530	6.0	24.0	14.0	mg/1
Turbidity	70	120	220	110	JTU
Conductivity	94	290	180	420	μ mho/cm
Cd	1027	4[a]	4[a]	4[a]	μg/1
Pb	1051	100	100	100	μg/1
Zn	1092	10	190	150	μg/1
Flow	61	0.24	0.01	0.01	cfs

---

[a] Lowest measureable.

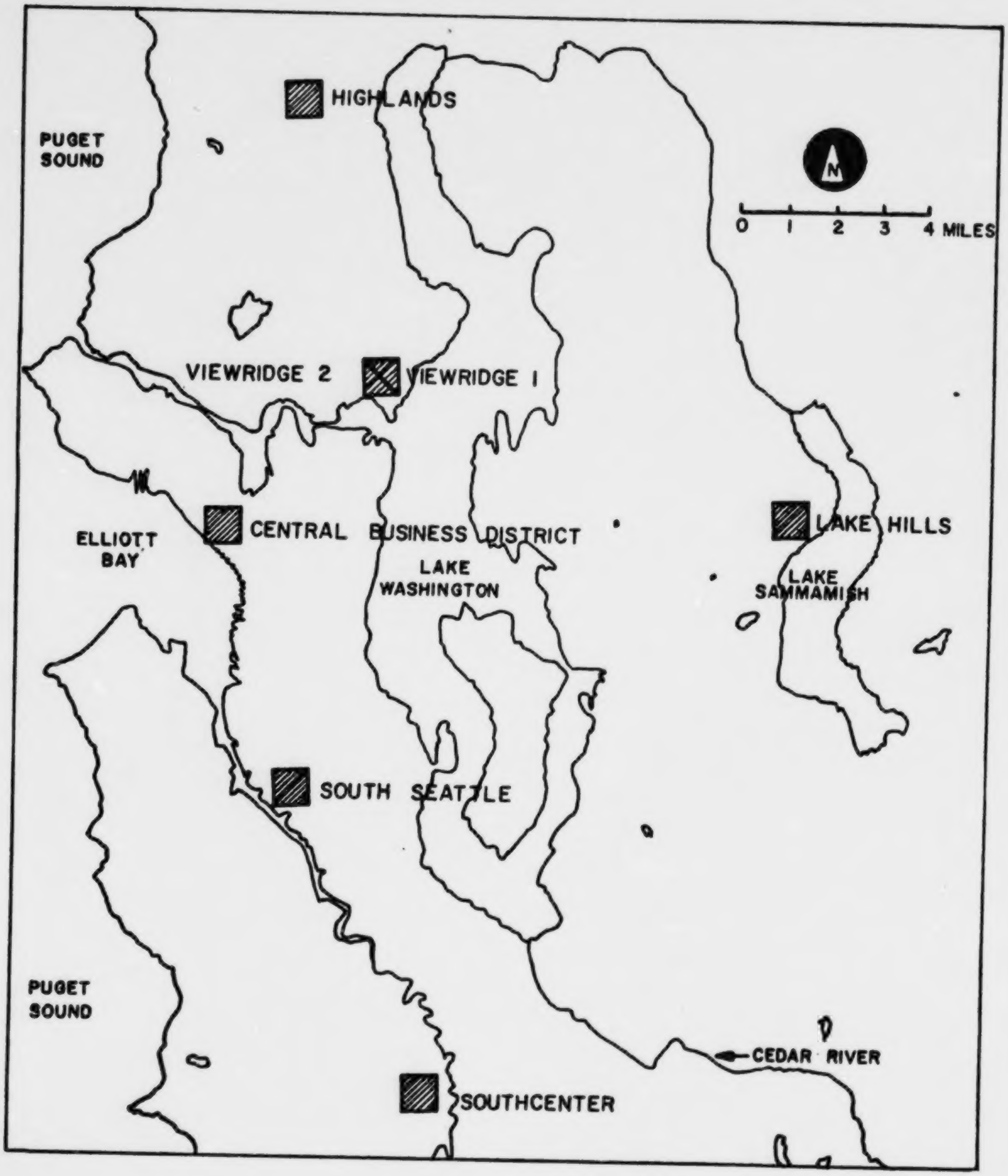


Figure VII-17 Location map for Seattle catchments.

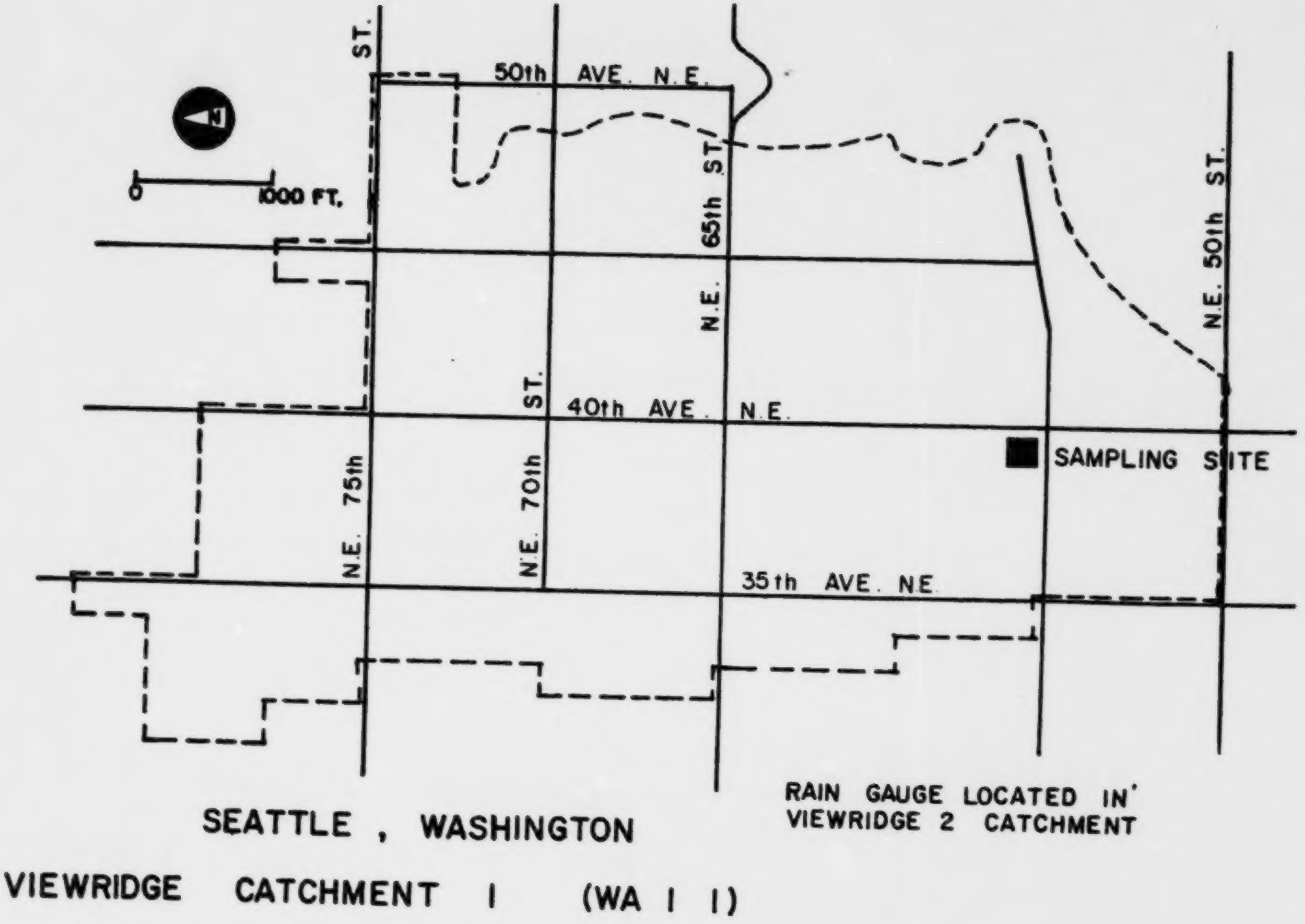


Figure VII-18 Seattle, Washington, Viewridge 1 Catchment, 630 ac (255 ha).

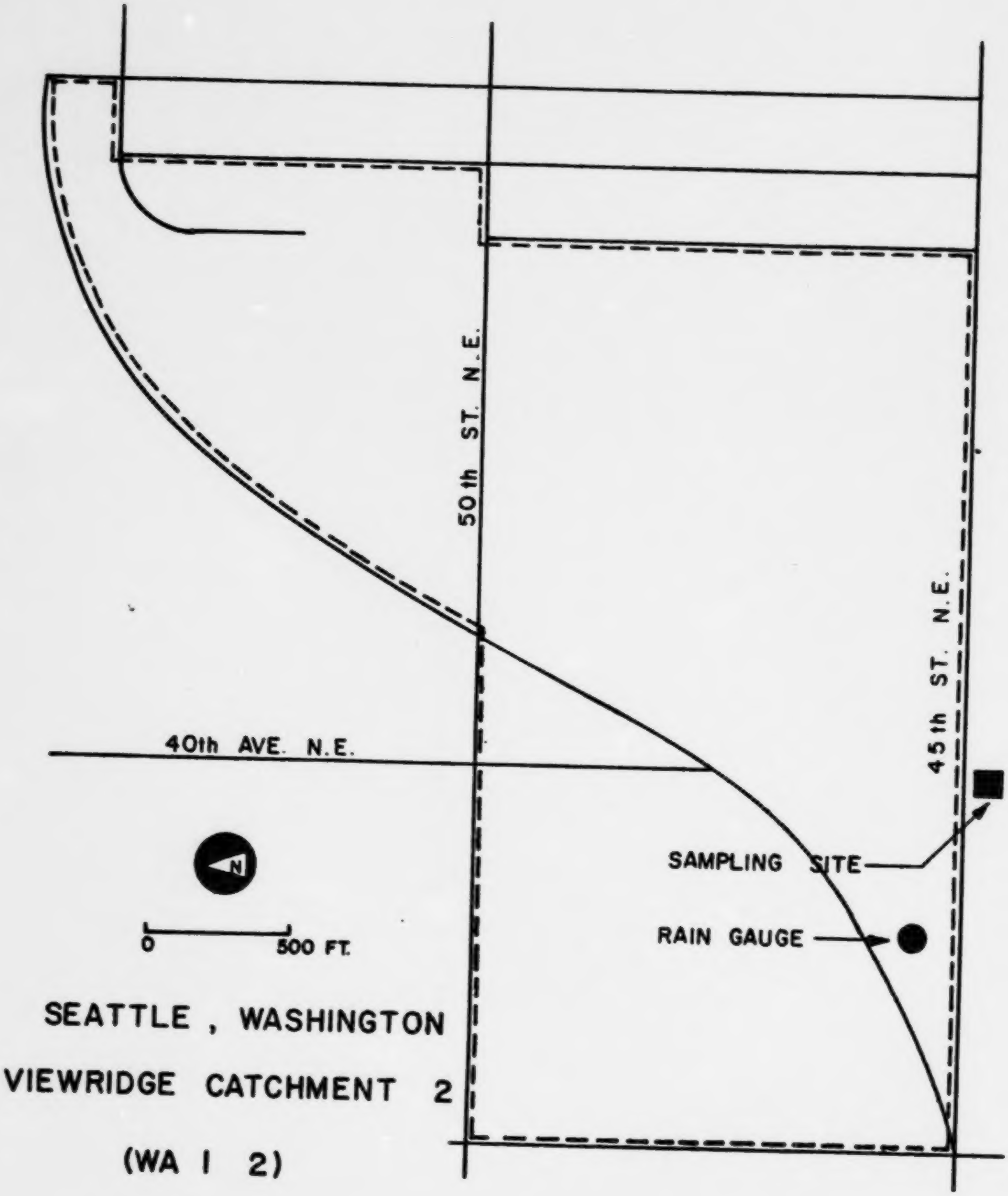


Figure VII-19 Seattle, Washington, Viewridge 2 Catchment, 105 ac (43 ha). Scale is approximate.

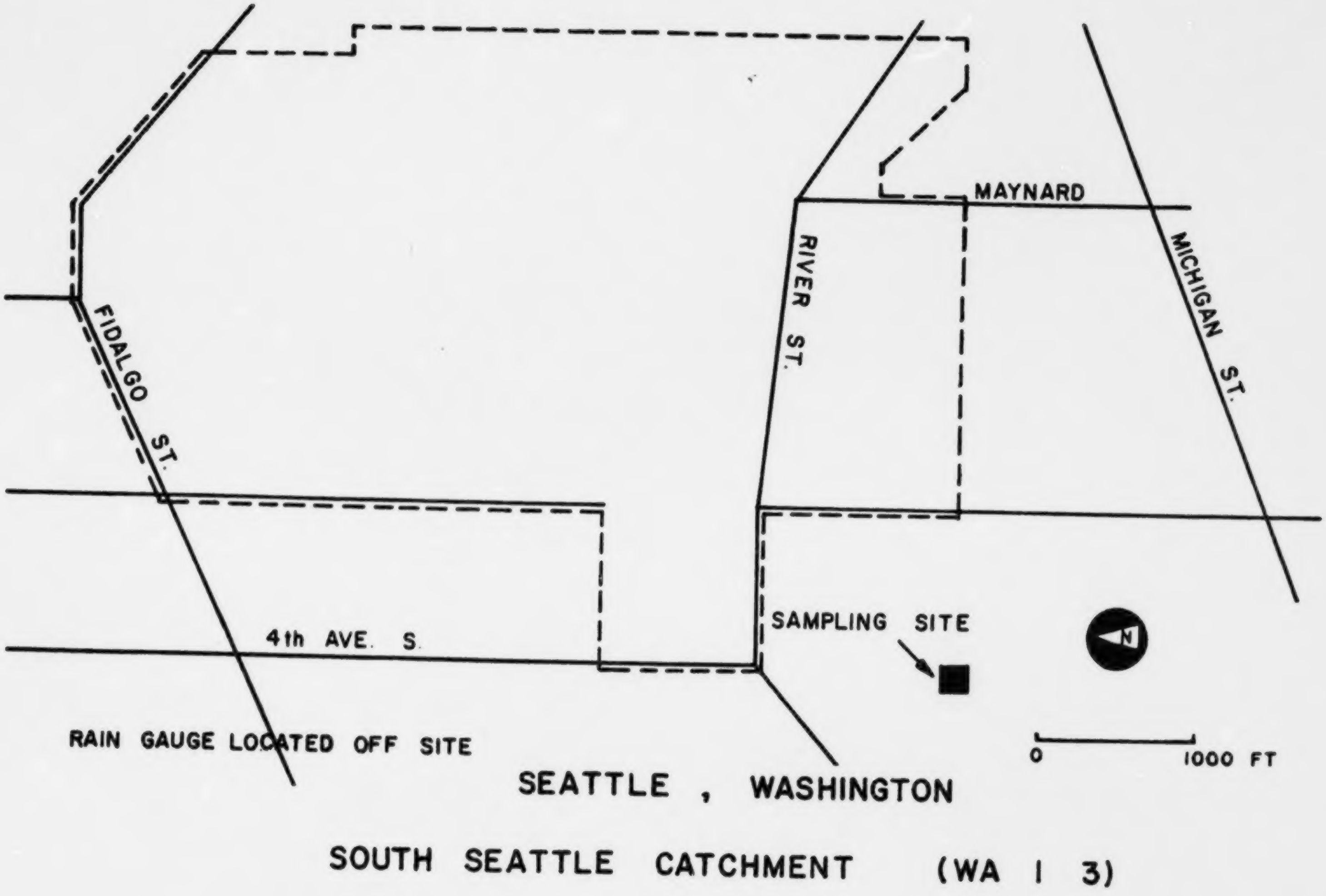


Figure VI1-20 Seattle, Washington, South Seattle Catchment, 27.5 ac (11.1 ha).

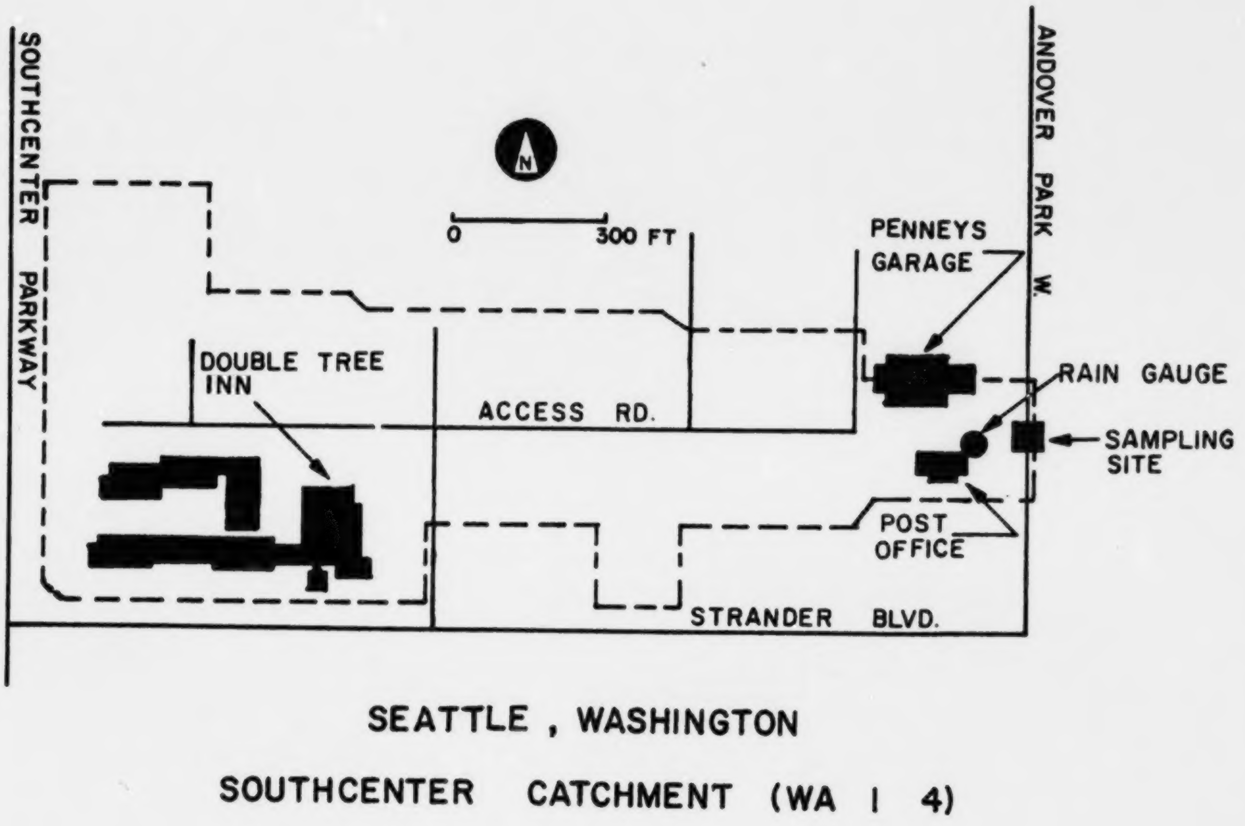
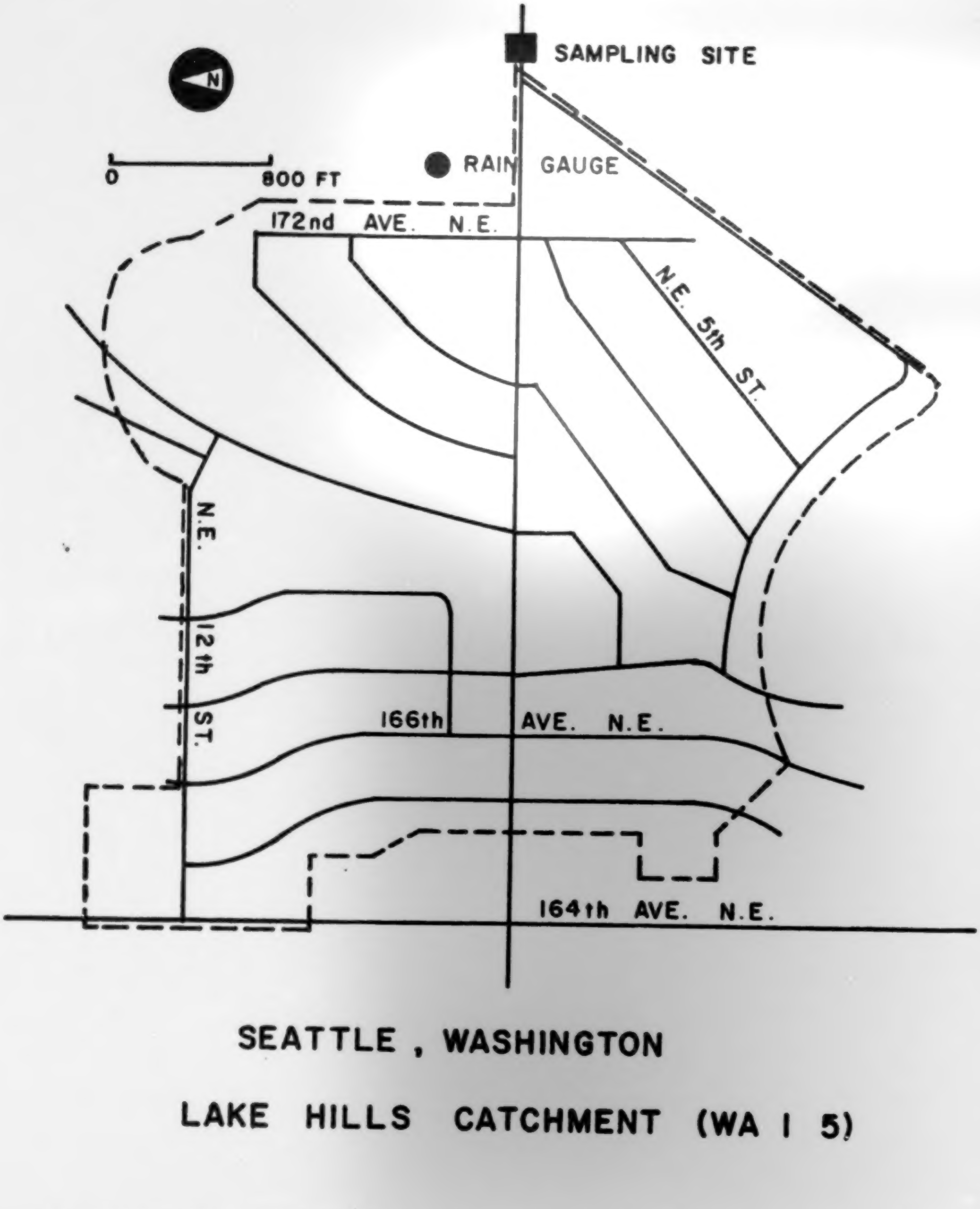


Figure VII-21 Seattle, Washington, Southcenter Catchment, 24 ac (9.8 ha).



SEATTLE , WASHINGTON

LAKE HILLS CATCHMENT (WA I 5)

Figure VII-22 Seattle, Washington, Lake Hills Catchment, 150 ac (61 ha).

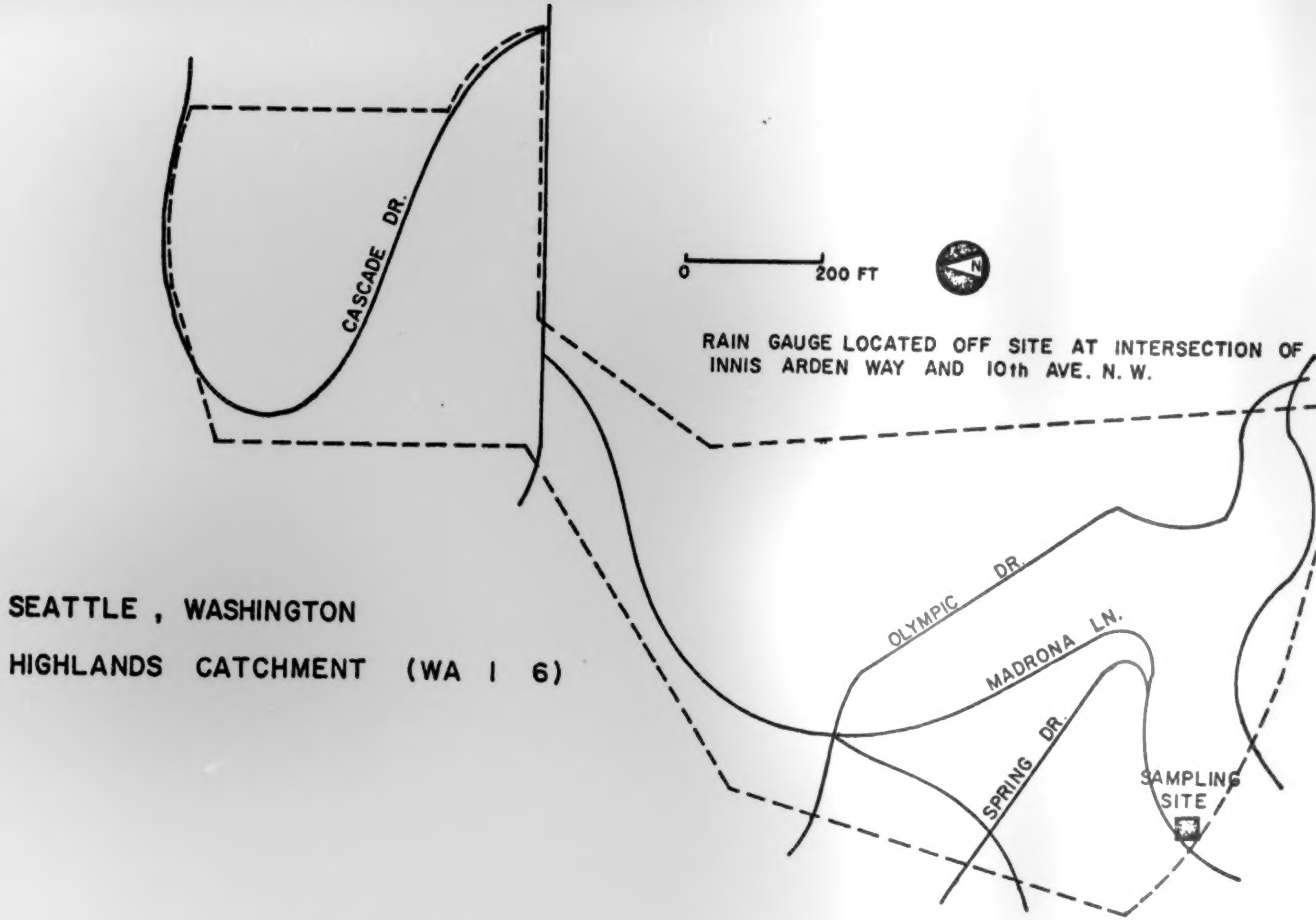

SEATTLE , WASHINGTON
HIGHLANDS CATCHMENT (WA I 6)
0
200 FT
N
RAIN GAUGE LOCATED OFF SITE AT INTERSECTION OF INNIS ARDEN WAY AND 10th AVE. N. W.
CASCADE DR.
OLYMPIC DR.
MADRONA LN.
SPRING DR.
SAMPLING SITE

Figure VII-23 Seattle, Washington, Highlands Catchment, 85 ac (34 ha).

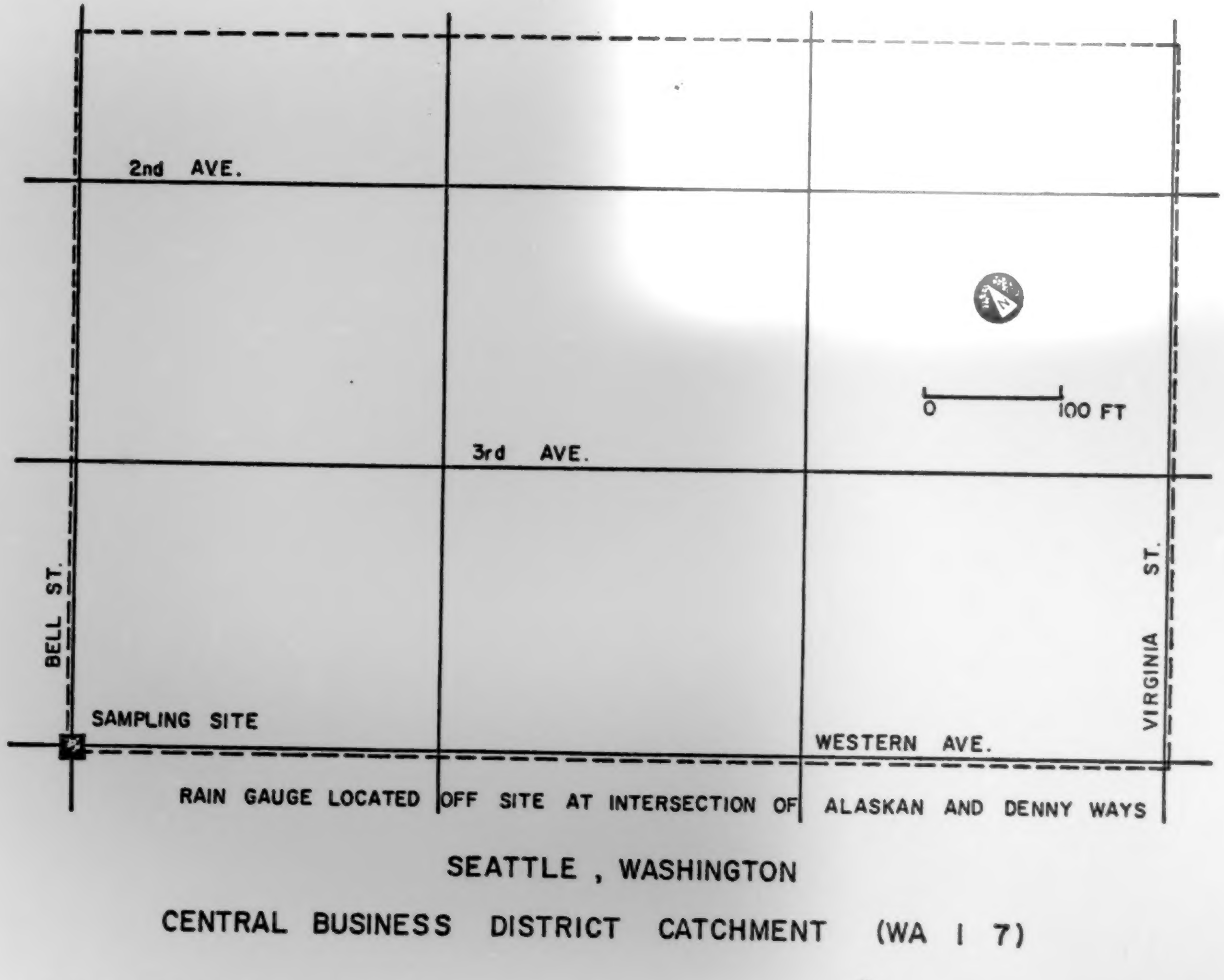

2nd AVE.
3rd AVE.
0
100 FT
BELL ST.
SAMPLING SITE
WESTERN AVE.
VIRGINIA ST.
RAIN GAUGE LOCATED OFF SITE AT INTERSECTION OF ALASKAN AND DENNY WAYS
SEATTLE, WASHINGTON
CENTRAL BUSINESS DISTRICT CATCHMENT (WA 1 7)

Figure VII-24 Seattle, Washington, Central Business District Catchment, 27.8 ac (11.3 ha).

WINDSOR, ONTARIO

Data were taken from the thesis of Droste (110) of the University of Windsor from one residential catchment for the period September 1972 to August 1973. Sampling and all data reduction were performed by the University of Windsor. Additional information about a nearby catchment is provided in an earlier study by Singh, but his data are not included because of construction activities underway during his sampling activities (111).

The data included herein were taken for a large number of storms, 22, but suffer from a large sampling interval of one hour. This will limit their usefulness somewhat for modeling purposes.

Province and City Code: ON 01

Table VII-30. Catchment - Windsor

No.	Name	Area ac (ha)	Sewerage	Population	Land Use
1	Labadie Road	29.5 (11.9)	Storm	590	Single family Residential

Table VII-31. Quantity Data - Windsor

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of Flow Meas	Sampling Interval min	No. in Catchment	No. near Catchment	Type	Sampling Interval min	No. Storms	Period
1	Labadie Road	f_1	60		3	r_1	60	22	9/72 - 8/73

---

f_1 - Stage measured by Arkon Model 63 TN Nitrogen Gas Bubbler Tube in 21 in. (53 cm) sewer at manhole. Flow computed using calibrated stage-discharge relationship.

r_1 - Not reported, but 0.01 in. (0.254 mm) accuracy.

Flow-rain synchronization: dependent upon separate clocks on rain and stage gages. No problems reported.

Comment: A weighted average of two or three rain gages is reported leading to some smoothing of data. Gages are operated by Department of Geography at University of Windsor. Storms of January 23-24, March 16-17, 1973 and November 25-26, 1972 contain significant snowfall.

Table VII-32. Quality Sampling - Windsor

Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. Storms	Period
Labadie Road	s_1	60	Manhole	22	9/72 - 8/73

---

s_1 - Automatic grab sampler by Testing Machines International. Sampling head anchored to bottom of sewer. Samples not taken when flow < 0.01 cfs (0.28 1/sec).

Time synchronization: Quality-flow good because measurements taken at same location.

Table VII-33. Quality Parameters - Windsor

Not all parameters were sampled for all storms

Parameter	STORET Code	Units
BOD_5	310	mg/l
Tot. Colif.	31504	MPN/100 ml[a]
Fec. Colif.	31616	MPN/100 ml[a]
Tot. Susp. Solids (SS)	530	mg/l
Vol. SS	535	mg/l
NH_3-N	610	mg/l-N
NO_3-N	620	mg/l-N
NO_2-N	615	mg/l-N
OPO_4-PO_4	660	mg/l as PO_4
Cl	940	mg/l
SO_4	945	mg/l
Alkalinity	410	mg/l as $CaCO_3$
Ca. hardness	901	mg/l as $CaCO_3$
Total hardness	900	mg/l as $CaCO_3$
pH	400	
Color	80	PTU
Turbidity	70	JTU
Spec. Conductivity	95	μ mho

Some additional data were taken in composite samples during storms.

---

[a] On data tape, coliforms are given as 100 x $\log_{10}$ (MPN/100 ml).

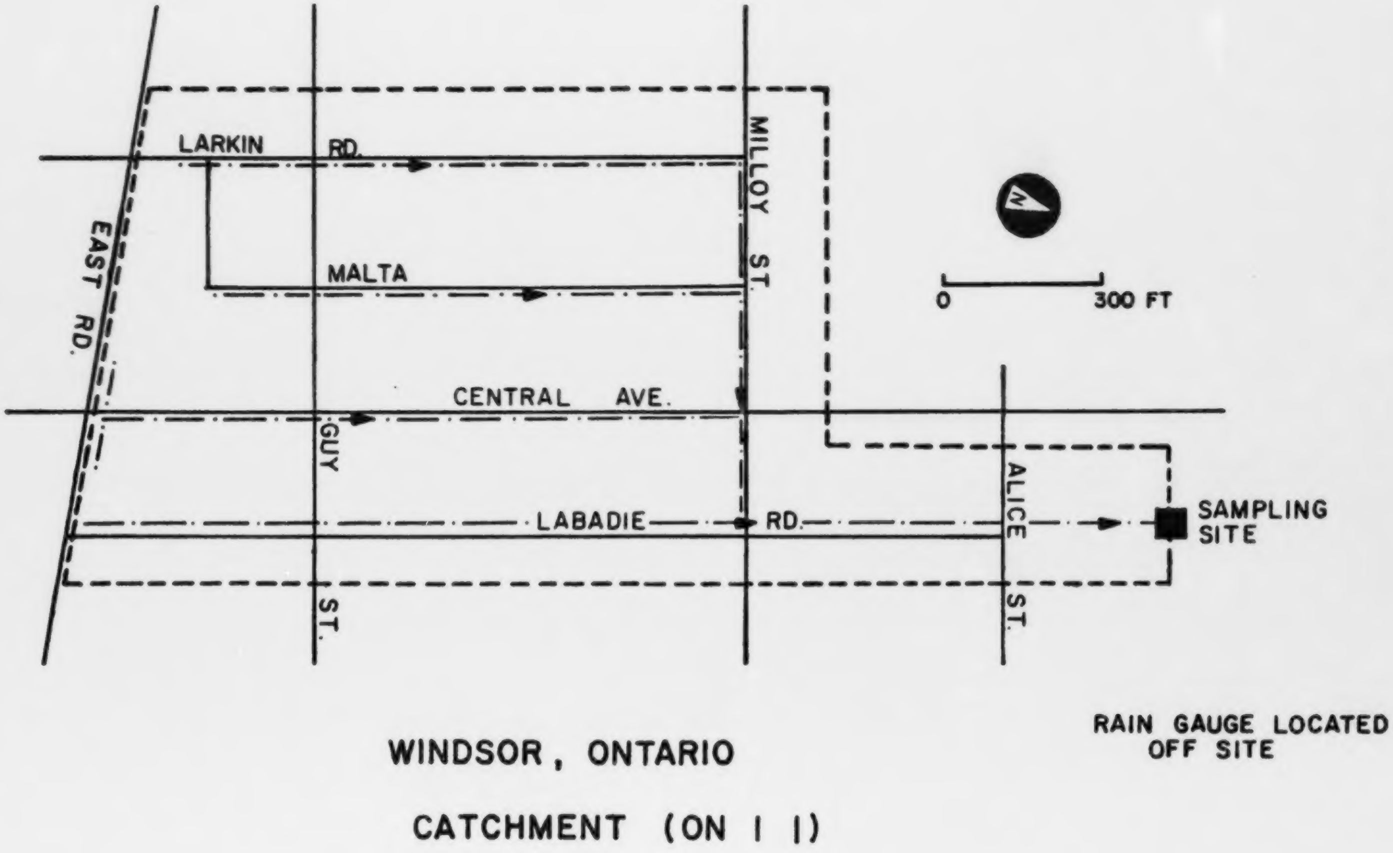


Figure VII-25 Windsor, Ontario, Labadie Road Catchment, 29.5 ac (11.9 ha).

WEST LAFAYETTE, INDIANA

Quantity and quality data were gathered for an urban and a semi-urban/rural watershed as part of OWRT-sponsored research conducted by Purdue University (Grant No. 14-31-001-3712).

The period of study was from October 1972 to May 1975. However, because of missing rainfall data, only 38 percent of the urban events and none of the semi-urban/rural ones are included here.

Data were taken from a completion report (161) and reduced prior to receipt by UF. Included data are considered to be of good quality.

Tucker (42) and Sarma et al. (182) also refer to these watersheds, as do Stall and Terstriep (49) in the evaluation of the RRL Method. The latter authors indicate that the catchment boundary can be variable because of the possibility of additional inflows during large storms that would ordinarily be intercepted by an adjacent combined sewer.

State and City Code: IN 01

Table VII-34

Catchments - West Lafayette

No.	Name	Area ac (ha)	Sewerage	Population	Imperviousness %	Land Use Percentages
1	Ross-Ade upper watershed	29 (11.7)	Storm	252[a]	38[b]	Single family residential

---

[a] - 72 single-family dwellings, 3-5 persons per dwelling, or 8.7 persons per acre.

[b] - Rooftops 17%, streets and driveways 21%.

Table VII-35 Quantity Data - West Lafayette

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Ross-Ade upper watershed	f_1	30	1	0	r_1	30	10	6/74-11/74
								2	8/67

---

f_1 - Columbus-type deep notch weir with a crest length of six feet, downstream of a 6ft (1.83m) deep by 6ft (1.83m) wide concrete flume which runs underneath the gaging station, which is a 15ft deep (46m) concrete pit, established by USGS in 1964. A stilling well, located to one side of the instrument pit, is connected to a Leupold-Stevens A-35 continuous stage recorder through a pulley arrangement.

r_1 - The rain gage has a 16 in. (40.6cm) diameter rainfall receiver, and a temperature sensor is located 8 ft (2.4m) above ground level. The Leupold-Stevens A-35 continuous stage recorder is also used to record cumulative rainfall and air temperature. The recorder has a 20 in. (50.8cm) chart and is driven at a rate of 144 in. /day (366cm/day) so readings can easily be made for 1 minute intervals.

Time Synchronization: Very good since the same recorder is used for rainfall and runoff recordings.

Table VII-36 Quality Sampling - West Lafayette

No.	Catchment	Sampling Method	Sampling Interval, min.	Sampling Location	No. of Storms	Period
1	Ross-Ade upper watershed	s_1	30	L_1	10	6/74-11/74

---

s_1 - Sentry Sequential Composite Sampler, Charles F. Warrick Floatless Liquid Level Control, Sears Model 28-7108 3-amp 12-volt battery charger, and an isolation transformer. Samples consisted of six 4-minute aliquots. Samples are not refrigerated.

L_1 - Sampler was on the floor of the pit, about 8 ft (2.4 m) above the liquid level in the sewer. The samples were collected from the sewer through "Tygon" tubing and distributed in the polyethylene gallon containers placed under the sampler.

Table VII-37 Quality Parameters - West Lafayette

Parameter	STORET Code	Units
BOD_5	310	mg/l
Tot Susp. Solids	530	mg/l

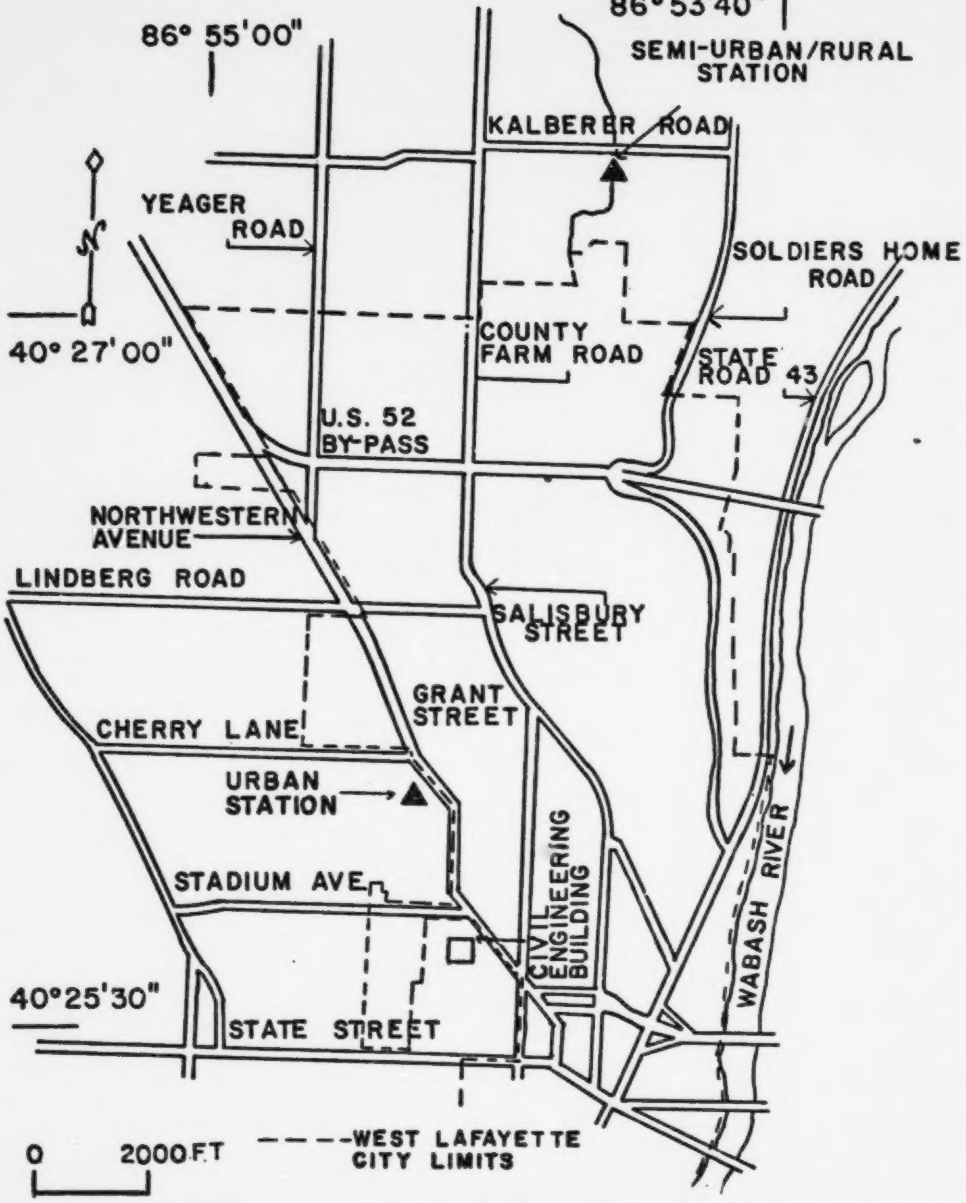


Figure VII-26. Location map for the urban station, Ross-Ade drain (upper basin)in West Lafayette, Indiana. The semi-urban/rural station is discussed in the Purdue University report (161) but not included in the data base because of a lack of rainfall data. Some rainfall-runoff data are available for the entire Ross-Ade basin (not shown), draining through the Purdue campus to the southwest of the city.

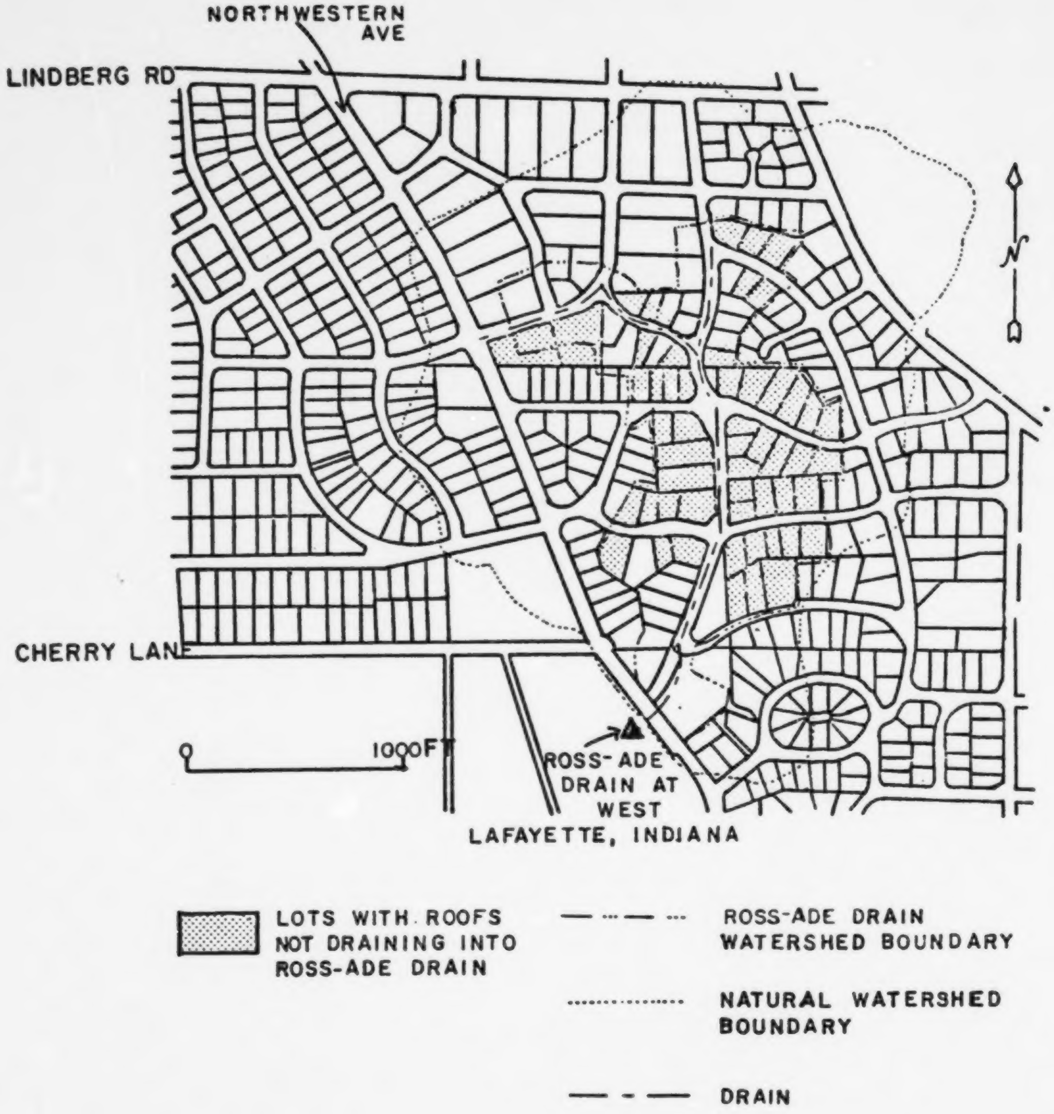

NORTHWESTERN AVE
LINDBERG RD
N
CHERRY LANE
0
1000FT
ROSS-ADE DRAIN AT WEST LAFAYETTE, INDIANA
▨ LOTS WITH ROOFS NOT DRAINING INTO ROSS-ADE DRAIN
ROSS-ADE DRAIN WATERSHED BOUNDARY
NATURAL WATERSHED BOUNDARY
DRAIN

Figure VII-27 West Lafayette, Indiana, Ross-Ade (Upper) Catchment(IN0101), 29 ac (11.7 ha). The larger, surrounding basin does not contribute to the Ross-Ade drain. Most roofs not contributing to the drain are assumed to discharge to a combined sewer.

GREENFIELD, MASSACHUSETTS

Data were collected by the University of Massachusetts for an urban basin covering most of the city. The period of study is from June 1976 to May 1977. The data are considered to be of very good quality. Portions of the study were supported by the following grants: University of Massachusetts Water Resources Research Center WR-A095 and WR-B059, Massachusetts Division of Water Pollution Control 76-10-2, and EPA R-803069.

Data were sent to UF by the University of Massachusetts and were reduced prior to their receipt. Unfortunately, from the 8 storm events received, 3 were deleted due to missing rainfall values.

Information on the basin, sampling program and SWMM calibration runs is given by Nunno (183) and Nunno et al. (184). Further information is given in other University of Massachusetts publications on SWMM modeling (74,143, 185,186) and SWMM input and output (187). Additional background information on the area and associated sampling in the Green River is given by DiGiano et al. (188).

State and City Code: MA 01

Table VII-38 Catchments - Greenfield

No.	Name	Area ac (ha)	Sewerage	Population	Imperviousness %	Avg. Land Slope %	Land Use Percentages	Street Cleaning Interval (days)
1	Maple Brook Basin	1014 (410)	Storm	14,800[a]	15.1	5.4	Single family residential, 64; multifamily residential, 5; commercial, 15; industrial, 3; open/park land, 13.	60

---

[a] 14,800 = 18,500 x 0.80 (18,500 = total population of Greenfield).

Table VII-39 Quantity Data - Greenfield

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Maple Brook Basin	f_1	2 - 15	1	0	r_1	2 - 15	5	6/76-4/77

---

f_1 - Sharp crested suppressed rectangular weir in 7 x 7ft (2.13x2.13m) concrete culvert. Head was continuously monitored with a Manning "Dipper" transmitter coupled with a Rustrak strip chart recorder.

r_1 - Weathermeasure P501 tipping bucket raingage, calibrated to 0.01 in. (0.25mm) of rainfall, coupled with a Rustrak strip chart recorder. Raingage located near centroid of basin.

Time synchronization: Rain-flow dependent on different clocks however , regular time checks were made to insure synchronization.

Table VII-40 Quality Sampling - Greenfield

No.	Catchment	Sampling Method	Sampling Interval, min.	Sampling Location	No. of Storms	Period
1	Maple Brook Basin	s_1	2 - 15	L_1	5	6/76-4/77

---

s_1 - Manning - S4000 automatic sampler used to take discrete samples.

L_1 - Intake was located 20 ft (6.1m) upstream of a 3.0ft high by 7.0ft wide (0.9m x 2.1m) sharp crested weir. The sampler was activated at a preselected water height by the stage recorder. Time of sampling was indicated on the stage strip chart.

Table VII-41 Quality Parameters - Greenfield

Not all parameters are given for all storms

Parameter	STORET Code	Units
BOD_5	310	mg/l
COD	340	mg/l
pH	400	
Tot. Susp. Solids	530	mg/l
Volatile Susp. Solids	535	mg/l
Ortho - PO_4	660	mg/l
Total P	665	mg/l
TOC	680	mg/l
Chloride	940	mg/l
Tot. Lead	1051	µg/l
Tot. Zinc	1092	µg/l

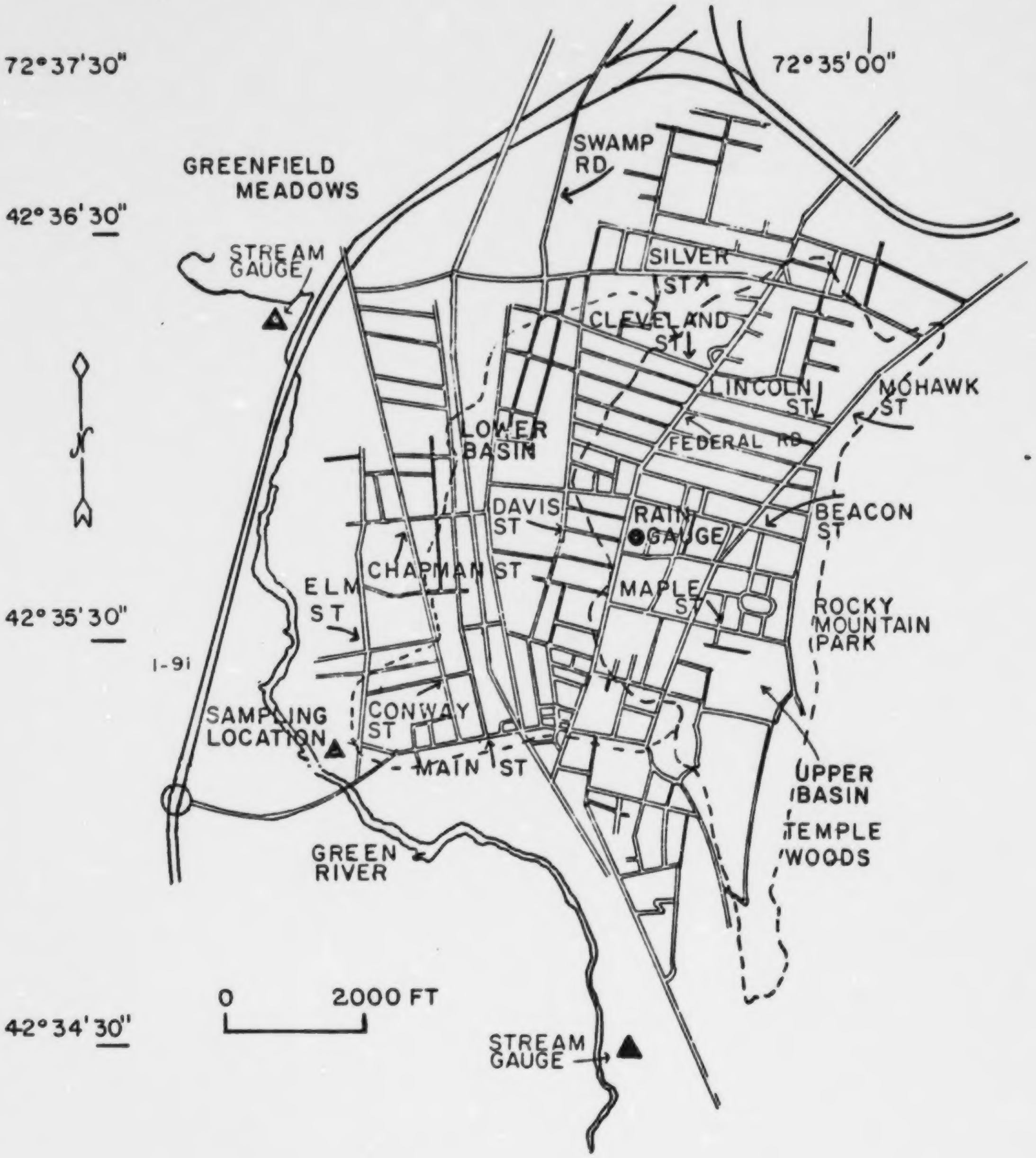


Figure VII-28 Greenfield, Massachusetts, Maple Brook Catchment (MA0101), 1014 ac (410 ha). The catchment covers most of the city and has been divided into an upper and lower basin during modeling studies by the University of Massachusetts.

NORTHAMPTON, MASSACHUSETTS

Quantity and quality data for a 380 ac (154 ha) urban sub-basin were collected during June and July 1977 by the University of Massachusetts under joint sponsorship of the OWRT (Grants WR-A095 and WR-B059), Massachusetts Division of Water Pollution Control (Grant 76-10-2), and the EPA (Grant R-803069). Details of the sampling program and subsequent SWMM modeling are given by Nunno et al. (184) and McAloon (189). The data for the six storm events were reduced prior to receipt by UF and are considered to be of good quality.

State and City Code: MA 02

Table VII-42 Catchments - Northampton

No.	Name	Area ac (ha)	Sewerage	Population	Imperviousness %	Avg. Land Slope %	Land Use Percentages	Street Cleaning Interval (days)
1	Market Street Brook Sewer Sub-basin I	380 (154)	Storm	a	24.2	2.86	Single family residential, 21; multi-family residential, 25; commercial, 26; industrial, 7; open/park land, 21.	b

---

a - Northampton's total population is 32,500 on 22,400 acres. This basin encompasses most of the commercial and industrial development.

b - The central business district (2.9% of catchment) is swept daily. Remaining catchment areas are swept at an average interval of 119 days.

Table VII-43 Quantity Data - Northampton

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Market Street Brook Sewer Sub-basin I	f_1	1 - 15	1	0	r_1	1 - 15	6	6/77-7/77

---

f_1 - Broad crested weir of wood construction in a 130 year old brick arch (1.52m base 1.62m height) sewer. Head was continuously monitored and recorded by Instrumentation Specialties Company companion units ISCO 1700 Flow Meter (bubbler principle) and ISCO 1720 Strip Chart Recorder.

r_1 - Weathermeasure P501 tipping bucket raingage calibrated to 0.25mm of rainfall, coupled with a Texas Electronics Model R2-1014P Recorder. The single raingage was located near the mouth of the catchment.

Time synchronization: Rain-flow records were dependent upon two different clocks; however, regular time checks were made to insure synchronization.

Table VII-44 Quality Sampling - Northampton

No.	Catchment	Sampling Method	Sampling Interval, min.	Sampling Location	No. of Storms	Period
1	Market Street Brook Sewer Sub-basin I	s_1	4 - 36	L_1	6	6/77-7/77

---

s_1 - Samples were manually taken from street level with rope and bucket; they were stored in ice throughout transport to lab, then were chemically preserved and analyzed according to Standard Methods.

L_1 - The sampling point was downstream from the weir which provided extensive turbulence in stream and therefore a well-mixed sample.

Table VII-45 Quality Parameters - Northampton

Not all parameters are given for all storms

Parameter	STORET Code	Units
BOD_5	310	mg/l
COD	340	mg/l
pH	400	
Tot. Susp. Solids	530	mg/l
Volatile Susp. Solids	535	mg/l
Ortho-PO_4	660	mg/l
Total P	665	mg/l
TOC	680	mg/l
Chloride	940	mg/l
Tot. Lead	1051	μg/l
Tot. Zinc	1092	μg/l
Antecedent Dry Days[a]	90100	days

[a] Antecedent dry days defined for this catchment as number of days before storm in which cumulative rainfall ≤ 1 in. (2.54 cm.)

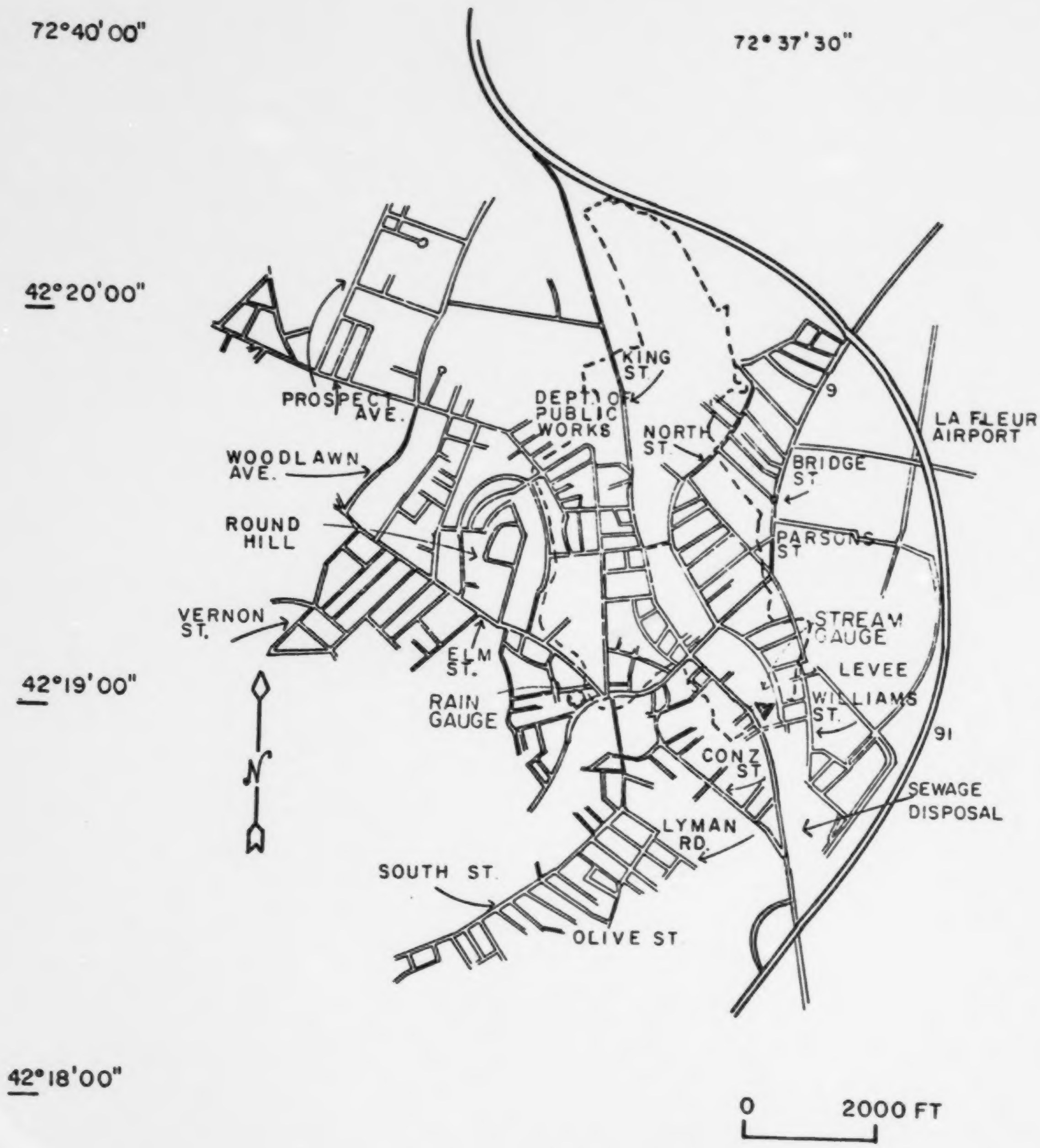


Figure VII-29 Northampton, Massachusetts, Market Street Brook Catchment (MA0201), 380 ac (154 ha). The catchment consists of sub-basin I of the University of Massachusetts study (189). The smaller sub-basin II (not shown) was modeled but not monitored.

BURLINGTON, ONTARIO

A 58 acre (23.5 ha) urban catchment (Malvern) was established, instrumented and monitored in Burlington, Ontario by the Hydraulics Research Division of the Canada Centre for Inland Waters in Burlington, Ontario. The work was done under the Research Program for the Abatement of Municipal Pollution within the Provisions of the Canada-Ontario Agreement on Great Lakes Water Quality, and project number 73-3-12.

Information on the basin, sampling program and SWMM calibration runs is given by Marsalek (66, 67, 200, 201). Data were taken from references 200 and 201 and were keypunched by the University of Florida. The former covers rainfall/runoff data during the period Sept. 1, 1973 to Dec. 10, 1973. The latter covers rainfall/runoff data in 1974. Monitoring of runoff quality started in late summer (1974). The data acquisition system used in 1974 is different from the one used in 1973.

Province and City Code: ON 02

Table VII-46 Catchments- Burlington, Ontario

No	Name	Area,ac (ha)	Population	Surface Characteristics	Average Land Slope %	Street Cleaning Interval	Soil Type	Drainage System	Land Use
1	Malvern	57.6 (23.31)	1,000[a]	b,c	1-3	Twice a year	d	Storm	e

[a] - 1974 estimate.

[b] - Impervious area: 34% or 19.51 ac (7.9 ha); Manning's n = .013*; Surface depression storage* = .02 in (0.05 cm); Roofs = 8.1 ac (3.3 ha), Roads = 6.68 ac (2.7 ha), Driveways = 3.10 ac (1.25 ha), Sidewalks = 1.63 ac (0.7 ha) Pervious area: 66% or 38.09 ac (15.4 ha); Manning's n = .25*; Surface depression storage = .184* in (0.47 cm); Infiltration rates: Max = 3.0 in/hr, (7.62 cm/hr), Min. = 0.52 in/hr (1.32 cm/hr); Front yards = 8.00 ac (3.2 ha), Back yards = 30.09 ac (12.2 ha).

* Assumed for model studies.

[c] - Roads = 1.87 mi (3.0 km), total curb length = 2 x 1.87 = 3.74 mi (6.0 km).

[d] - Fox sandy loam, shallow phase, well drained.

[e] - 100% Single Family Residential; most houses built between 1960-1964; no vacant lots or parks; total of 214 houses with market price (1975) of \$75,000-\$100,000; average lot size = 9,000 ft^2 (8,361 m^2).

Table VII-47 Quantity Data - Burlington, Ontario

No	Catchment	Flow: Type of Flow Measurements	Flow: Sampling Interval min	Rain: Gages Used: No. in Catch.	Rain: Gages Used: No. Near Catch.	Rain: Type	Rain: Sampling Interval min	No. of Storms	Period
1	Malvern	f_1	2	1	-	r_1	2	7	9/73-12/73
		f_1	1 minimum	1	2	r_2	1 minimum	22	5/74-12/74

f_1 - Rectangular weir, 1 ft height x 3.53 ft-width (30.5 cm x 107.6 cm); calibrated in laboratory for flows 0.4 - 16 cfs (0.011 - 0.45 m^3/sec); located at the outfall from the sewer system; weir head recorded by an Ott Vertical Water Level Recorder, Type R16; Accuracy of the recorder ± 0.0005 ft (± 1.52 mm); chart speed 0.63 in/hr (1.6 cm/hr).

r_1 - Standard AES tipping bucket with a 24-hour recorder. Bucket capacity 0.01 inches (2.54 mm). Recorder speed 0.59 in/hr (1.5 cm/hr).

Possible poor synchronization of precipitation/runoff records; need to replace charts every day.

r_2 - Leupold and Stevens tipping bucket raingage with a capacity of 0.01 inches (.254 mm); raingage output recorded by a Leupold and Stevens Type A (Model 71) Recorder; used chart drive speed 2.4 inches/hour (61 mm/hr) which makes possible discretization into one-minute intervals for short, medium-to-high intensity storms.

Table VII-48 Quality Sampling - Burlington, Ontario

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
1	Malvern	S_1	S_2	L_1	5	9/74-12/74

S_1 - Sirco automatic wastewater sampler (Model B/ST-VS/24A-EX); sequential collection of up to 24 one-liter samples; automatic activation for storm water level of 1.5 inches (0.04 m) above the zero-flow level.

s_2 - Nominal 5 min, actual 6.5 min.

L_1 - Outfall from the Malvern catchment, 1.34 m above weir.

Table VII-49 Quality Parameters - Burlington, Ontario

Not all parameters are available for all storms

Parameter	STORET Code	Units
COD	340	mg/1
$NO_2 + NO_3 - N$	630	mg/1
Tot. P	665	mg/1
Suspended Soilds (Non filtrable residue at 105°C)	530	mg/1
Volatile Suspended-Solids (VSS)	535	mg/1

Table VII-50 Miscellaneous Meteorological Data for Burlington (200)

	Winds		Ambient		Evaporation (inches)	
	Direction	Speed (mph)	Temperature (°F)	Rainfall (inches)	Pan	Lake
Jan.	W	9.6	23.0	1.11		
Feb.	W	9.6	24.4	1.15		
Mar.	W	9.7	32.1	1.71		
Apr.	W	9.0	44.3	2.81		
May	S	7.8	54.4	2.72	5.8	4.1
June	S	7.4	65.3	2.61	6.3	4.4
July	W	7.0	70.4	2.91	7.4	5.3
Aug.	W	6.7	69.1	3.11	6.1	4.3
Sep.	W	7.2	61.8	2.61	4.2	3.0
Oct.	S	7.8	51.4	2.46	2.8	2.0
Nov.	W	9.6	39.9	2.26	5.8*	4.1*
Dec.	W	9.9	28.2	1.72		
Year	W	8.4	47.1	27.19	38.4	27.2

* Cumulative value November to April.

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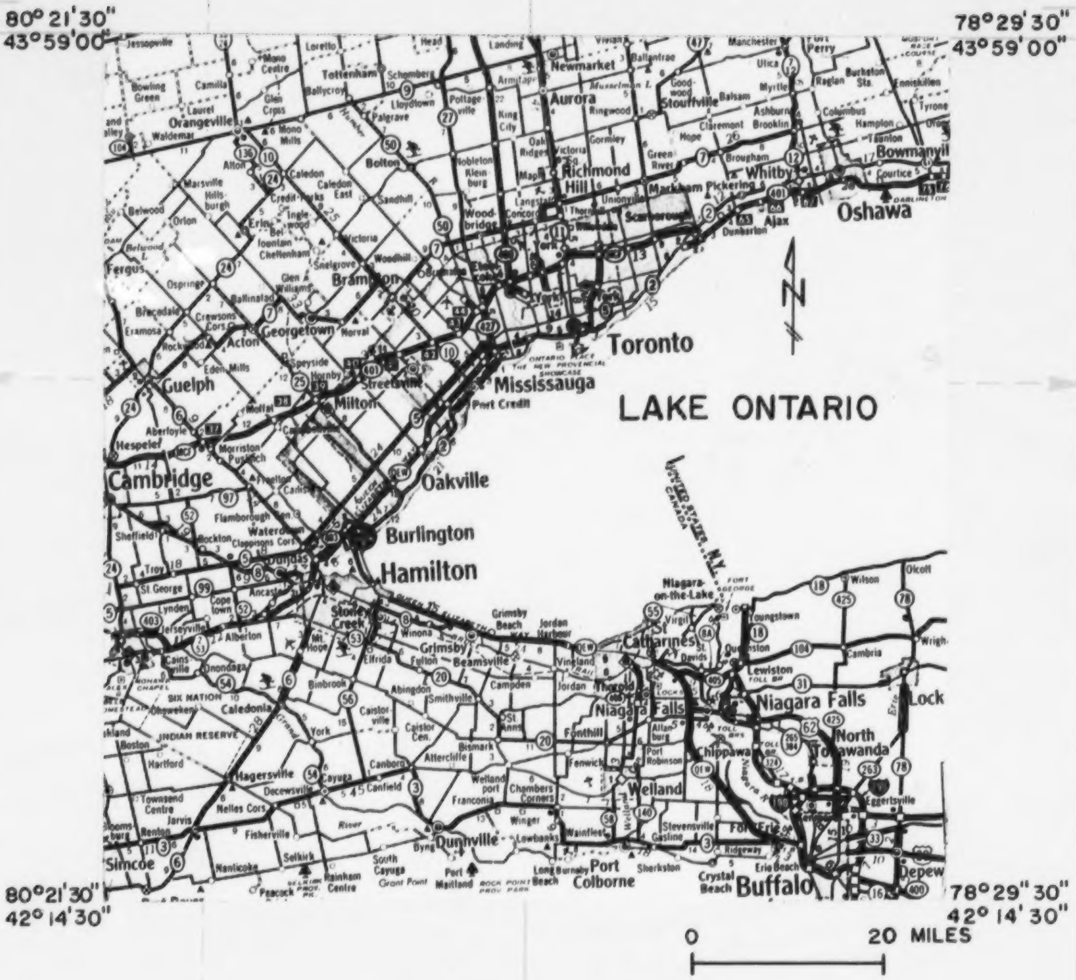

BURLINGTON, ONTARIO

MALVERN CATCHMENT

(ON 2 1)

Figure VII-30. Location map for Burlington, Ontario catchment

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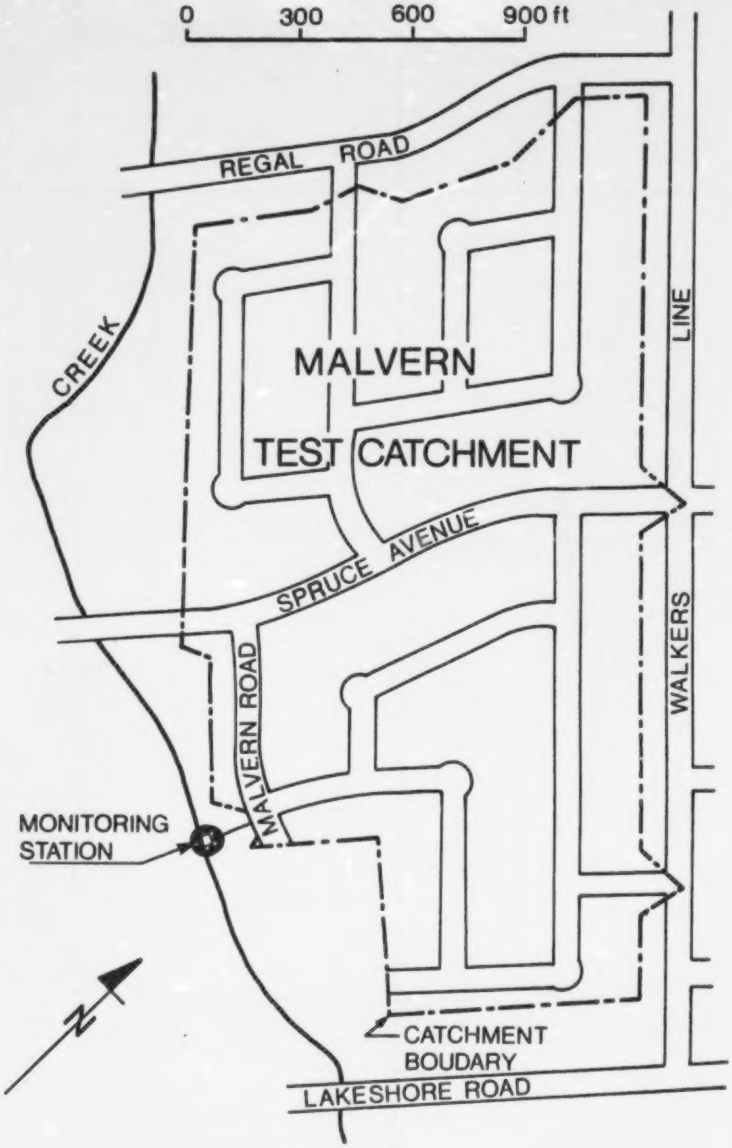

BURLINGTON, ONTARIO

MALVERN URBAN TEST CATCHMENT

Figure VII-31. Burlington, Ontario, Malvern Urban Test Catchment (ON0201) 57.6 ac (23.3 ha)

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CHICAGO, ILLINOIS

The Northeastern Illinois Planning Commission (NIPC) undertook, as part of its 208 Areawide Waste Treatment Management Study, a land use runoff sampling program in order to characterize the quality of stormwater runoff from sixteen small watersheds of homogenous land use (211). At the same time a receiving water sampling program was started with the purpose of collecting water quality and stream flow data during dry and wet weather from major streams and watersheds of mixed but representative land use tributary to lake Michigan. Data were collected for the period of April 1977 to August 1977, under the NIPC-MSDGC (Metropolitan Sanitary District of Greater Chicago) 208 contract. Data for sixteen watersheds were taken from NIPC reports (202, 203, 204, 205, 207) (keypunched by the University of Florida) and from a NIPC tape (206). Polls and Lanyon, (210) discuss pollutant concentrations in the above catchments.

State and City Code: IL 01

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Table VII-51 Catchments - Chicago Illinois

No	Name	Area,ac (ha)	Land Use	Drainage System
2	Ravine Drive, Highland Park	313.6 (126.91)	Ravine	Storm
3	Woodfield, Rolling Meadows	345.6 (139.86)	Commercial	Storm
4	Centex, Elk Grove Village	236.8 (95.83)	Light Industrial	Storm
5	Seymour Avenue Mundelein	1139.2 (461.03)	Single Family Residential	Storm
6	Glen Ellyn Road, Glendale Heights	992.0 (401.46)	Single Family Residential	Storm
7	Addison Avenue, Elmhurst	601.6 (243.47)	Light Industrial	Storm
8	Springingsguth Road, Schaumburg	1491.2 (603.49)	Single Family Residential	Storm
9	Park Forest South	160.0 (64.75)	Multi Family Residential	Storm
10	Winston Village, Bolingbrook	89.6 (36.26)	Multi Family Residential	Storm
11	State Highway 83, Clarendon Hills Flagg Creek	972.8 (393.69)	Single Family Residential	Storm

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(4-76)

Table VII-51 Catchments - Chicago, Illinois (Cont'd)

No	Name	Area,ac (ha)	Land Use	Drainage System
12	Perry Road	4435.2 (1794.9)	Agriculture[a]	Storm
13	Beecher-Peotone Road	2617.6 (1059.3)	Agriculture[a]	Storm
14	Olcott Road	3456.0 (1398.6)	Agriculture[a]	Storm
15	Pioneer Woods Palos Park	2304.0 (932.43)	Forest[b]	Storm
16	Alden Road	4000.0 (1618.8)	Agriculture[a]	Storm
17	Hawthorn Center Vernon Hills	96.0 (38.85)	Shopping Center	Storm

[a] - Corn predominant crop with rotations of pasture and other grain crops.

[b] - 100% forest

Table VII-52 Quantity Data - Chicago, Illinois

No	Catchment	Flow		Rain					
				Gages Used					
		Type of Flow Measurements	Sampling Interval min	No. in Catch.	No. Near Catch.	Type	Sampling Interval min	No. of Storms	Period
2	Ravine Drive Highland Park	f, d_2	5	1	-	r	5	3	7/77-8/77
3	Woodfield Rolling Meadows	f, d_2	5	1	-	r	5	6	4/77-6/77
4	Centex Elk Grove Village	f, d_3	5	1	-	r	5	6	4/77-6/77
5	Seymour Ave. Mundelein	f, d_4	5	1	-	r	5	8	4/77-7/77
6	Glen Ellyn Road Glendale Heights	f, d_5	5	1	-	r	5	8	4/77-6/77
7	Addison Avenue Elmhurst	f, d_2	5	1	-	r	5	7	4/77-7/77
8	Springingsguth Rd Schaumburg	f, d_5	5	1	-	r	5	4	6/77-7/77
9	Park Forest South	f, d_6, s	5	1	-	r	5	5	5/77-7/77
10	Winston Village Bolingbrook	f, d_5	5	1	-	r	5	2	4/77-5/77
11	State Highway 83 Clarendon Hills Flagg Creek	f, d_7	5	1	-	r	5	4	5/77-6/77

Table VII-52 Quantity Data - Chicago, Illinois (Cont'd)

		Flow		Rain					
				Gages Used					
No	Catchment	Type of Flow Measurements	Sampling Interval min	No. in Catch.	No. Near Catch.	Type	Sampling Interval min	No. of Storms	Period
12	Perry Rd.	f, d_3	5	1	-	r	5	5	6/77-7/77
13	Beecher-Peotone Road	f, d_8	5	1	-	r	5	4	6/77-7/77
14	Olcott Road	f, d_5	5	1	-	r	5	2	7/77
15	Pioneer Woods, Palos Park	f, d_3	5	1	-	r	5	1	4/77
16	Alden Road	f, d_5	5	1	-	r	5	1	6/77
17	Hawthorn Center Vernon Hills	f, d_9	5	1	-	r	5	3	7/77

f,r - USGS - installed digital water-stage recorder and rainfall gage.
d_2 - Rating developed from channel geometry.
d_3 - Rating developed using culvert geometry and discharge measurements.
d_4 - Rating developed using culvert and channel geometry.
d_5 - Rating developed using culvert geometry.
d_6 - Rating developed from weir formula.
d_7 - Rating developed using stream and culvert geometry.
d_8 - Rating developed from culvert and bridge geometry.
d_9 - Rating developed using pipe geometry.
s - Two-foot (60.96 cm) trapezoidal weir installed by MSDGC in a tributary of Deer Creek.

Table VII-53 Quality Sampling - Chicago, Illinois

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
2	Ravine Drive, Highland Park	S_1	5		3	7/77-8/77
3	Woodfield Rolling Meadows	S_2	5	L_1	6	4/77-6/77
4	Centex Elk Grove Village	S_2	5	L_1	6	4/77-6/77
5	Seymour Ave., Mundelein	S_2	15	L_1	8	4/77-7/77
6	Glen Ellyn Rd., Glendale Heights	S_2	15	L_1	8	4/77-6/77
7	Addison Avenue Elmhurst	S_2	5	L_1	7	4/77-7/77
8	Springingsguth Rd., Schaumburg	S_2	15	L_1	4	6/77-7/77
9	Park Forest South	S_2	5	L_1	5	5/77-7/77
10	Winston, Village Bolingbrook	S_2	5	L_1	2	4/77-5/77
11	State Highway 83 Clarendon Hills Flagg Creek	S_2	15	L_1	4	5/77-6/77

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Table VII-53 Quality Sampling - Chicago, Illinois (cont'd)

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
12	Perry Road	S_2	15	L_1	5	6/77-7/77
13	Beecher-Peotone Road	S_2	15	L_1	4	6/77-7/77
14	Olcott Road	S_2	15	L_1	2	7/77
15	Pioneer Woods Palos Park	S_1	15		1	4/77
16	Alden Road	S_2	15	L_1	1	6/77
17	Hawthorn Center, Vernon Hills	S_2	5	L_1	3	7/77

S_1 - Manual sampling.

S_2 - Fieldtec Automatic Water Sampler; pumps a continuous stream of water into 12 individual, plastic sample bottles or a one gallon sample during a five or fifteen-minutes interval. Five minute interval used for developed or urban watersheds, fifteen-minute interval for the larger urban, forest, and agricultural areas. The automatic sampler runs on 110 volts power. It is equipped with an elapsed time clock which starts when the sampler starts. A refrigeration unit below the sampler maintains the samples at a temperature of 4°C. The automatic samplers were housed in either a trailer or a temporary shelter. In most cases, a 0.2 foot (6 cm) rise in stage in the stream was used to activate the sampler.

L_1 - The sample intake tube was located in the center of the streamflow, two to three inches (5-8 cm) above the stream bottom, and at a 45° angle pointing upstream into the flow, thus gathering a representative sample of the solids in the flow stream and preventing clogging and physical damage to the intake tube.

Table VII-54 Quality Parameters - Chicago, Illinois

Not all parameters are available for all storms.

Parameter	STORET Code	Units
BOD_5	310	mg/l
BOD_{20}	324	mg/l
pH	403	mg/l
Tot. Alkalinity	410	mg/l
Tot. Residue (TS)	500	mg/l
Tot. Nonfilterable Residue (TSS)	530	mg/l
Volatile Nonfilterable Residue	535	mg/l
Total Ammonia Nitrogen	610	mg/l
Total Kjeldahl Nitrogen	625	mg/l
Total Nitrite + Nitrate	630	mg/l
Total Hardness	900	mg/l
Total Silica	956	mg/l
Phosphate, Total Sol., Colorimetric Method	70506	mg/l

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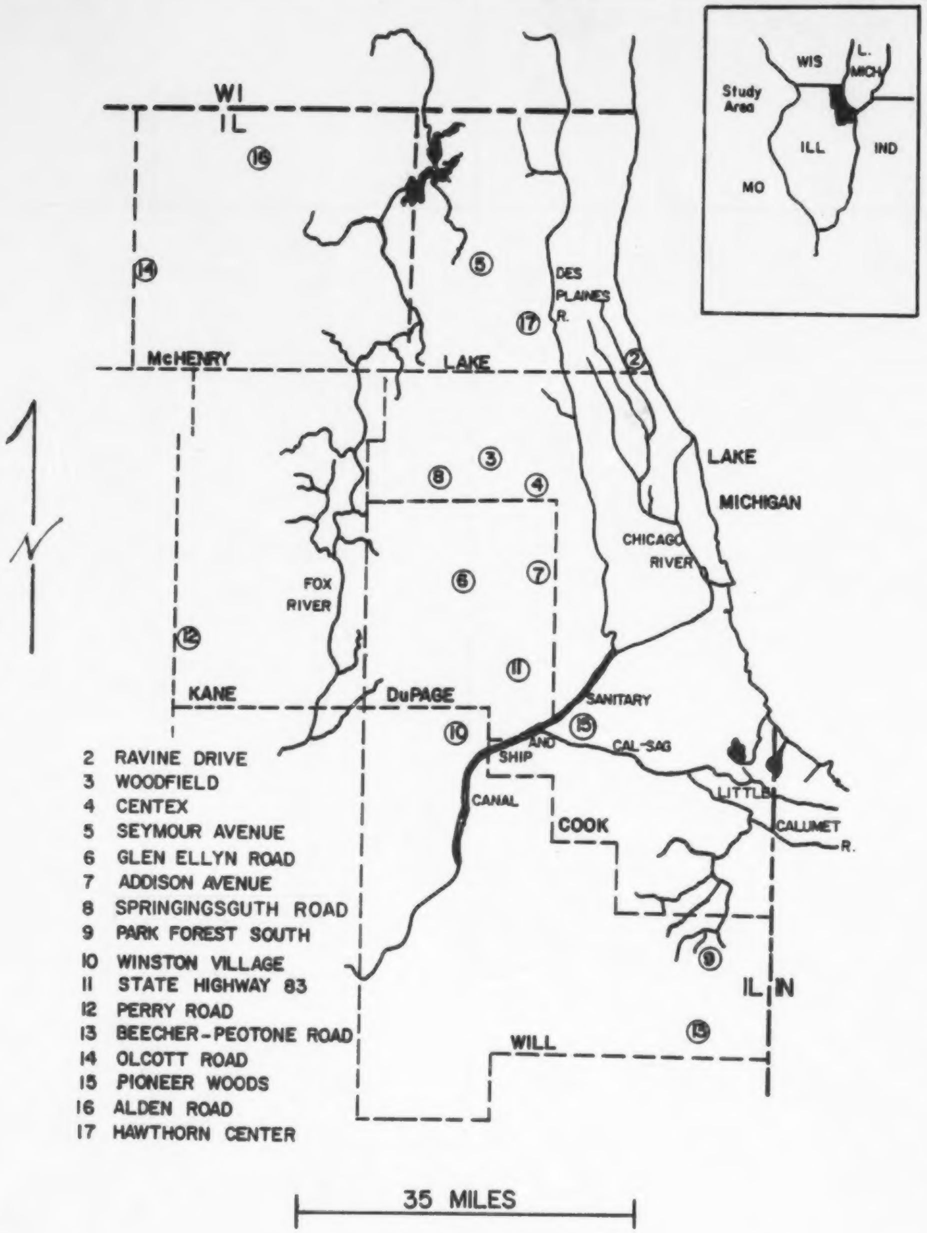

Figure VII-32. Location map for Chicago catchments

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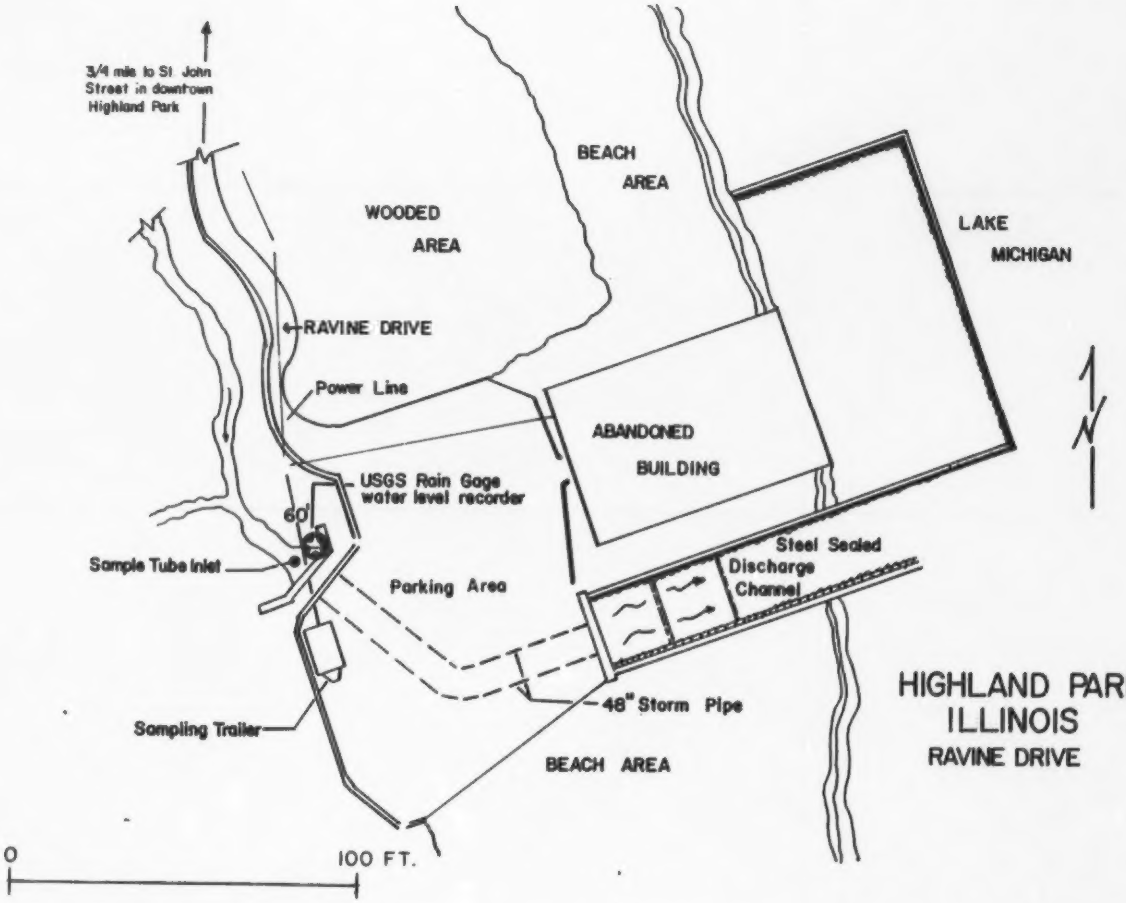

Figure VII-33. Chicago, Illinois, Ravine Drive, Highland Park (IL0102), 313.6 ac (126.9 ha)

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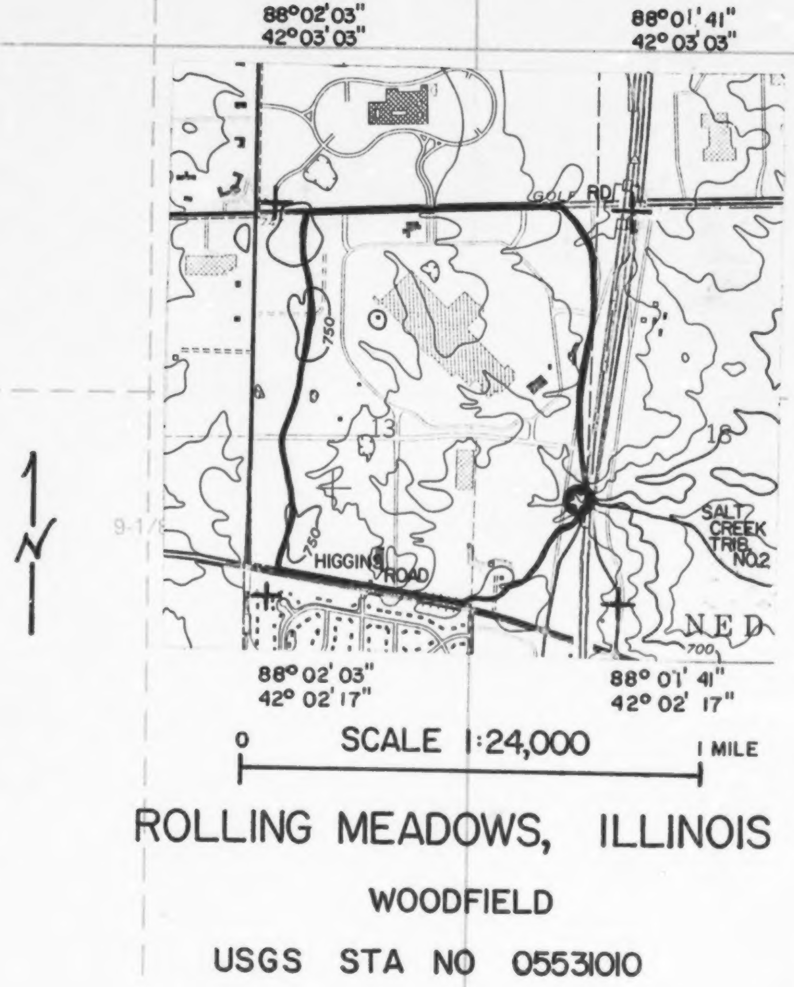

Figure VII-34. Chicago, Illinois, Woodfield, Rolling Meadows (IL0103), 345.6 ac (139.86 ha)

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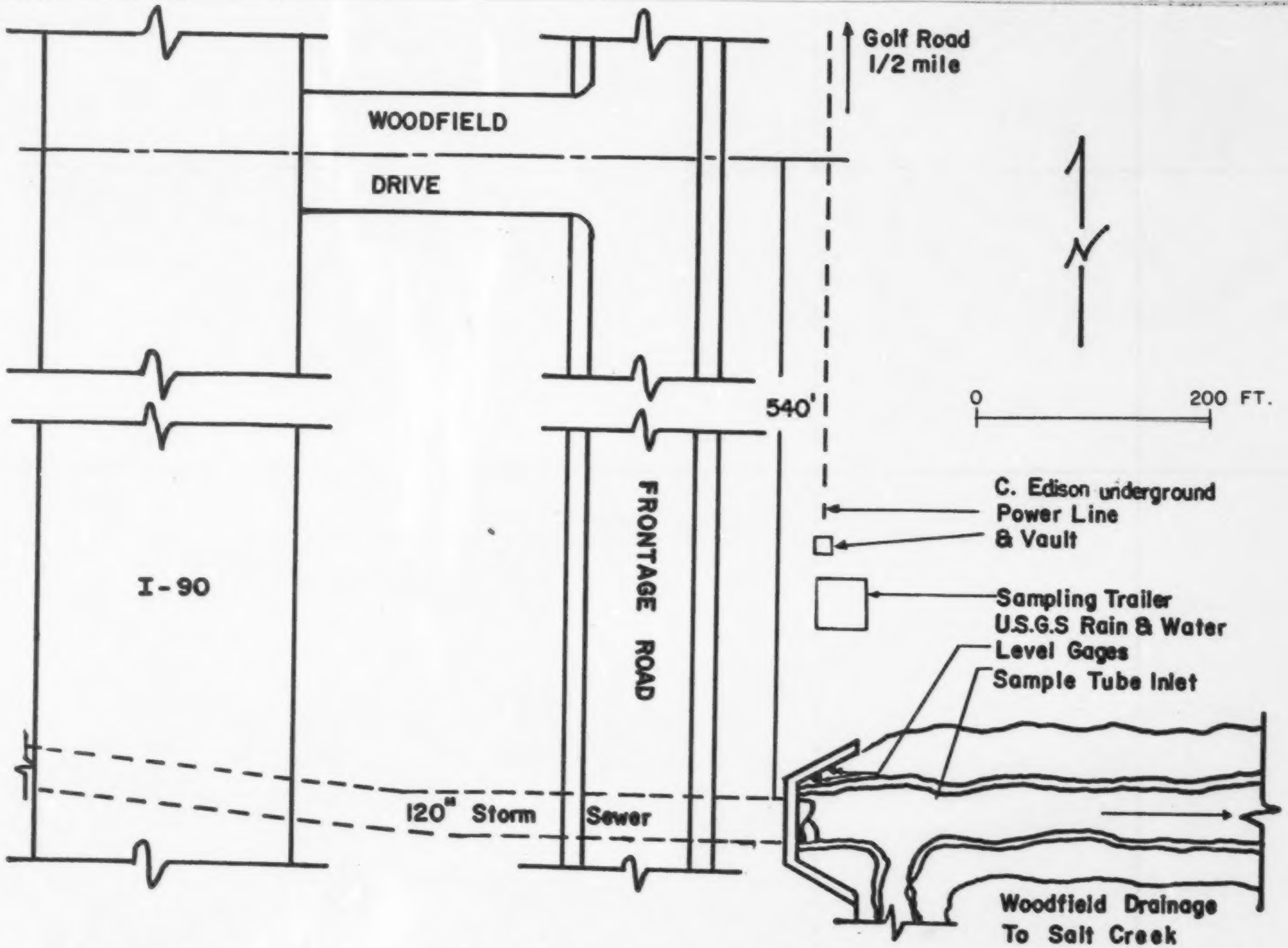

Figure VII-35. Chicago, Illinois, Woodfield, Rolling Meadows (IL0103), 345.6 ac (139.86 ha)

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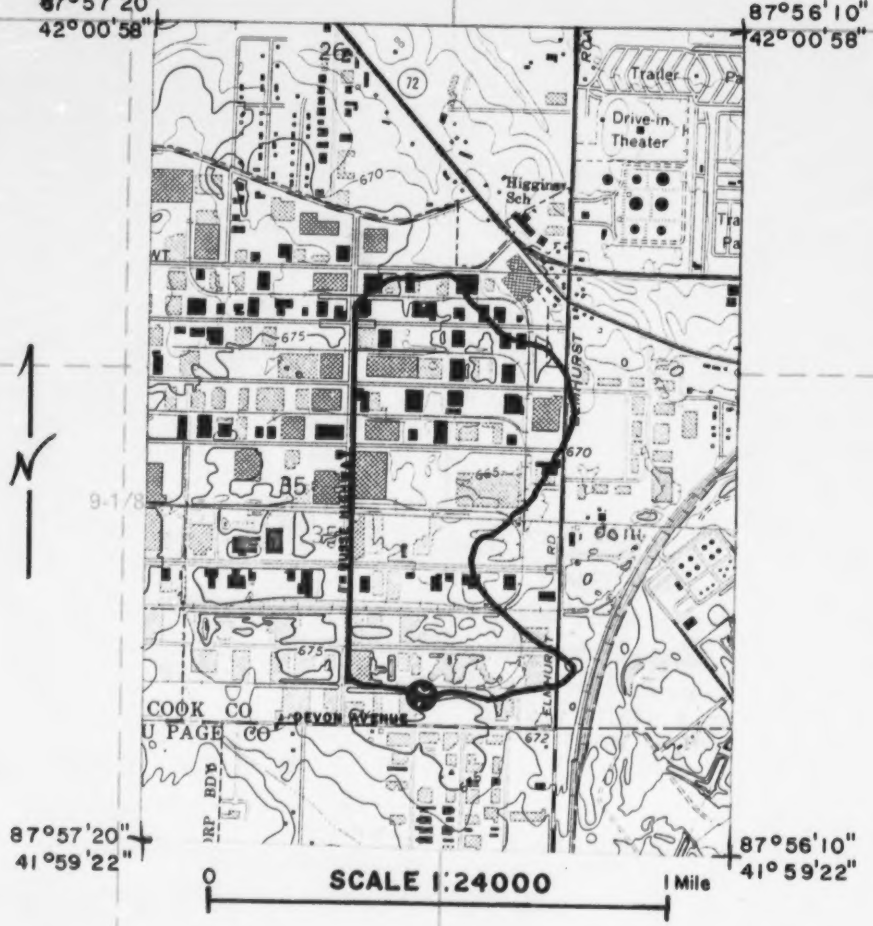

ELK GROVE VILLAGE, ILLINOIS

CENTEX

U.S.G.S. STA. NO. 05530290

Figure VII-36. Chicago, Illinois, Centex, Elk Grove Village (IL0104), 236.8 ac (95.83 ha)

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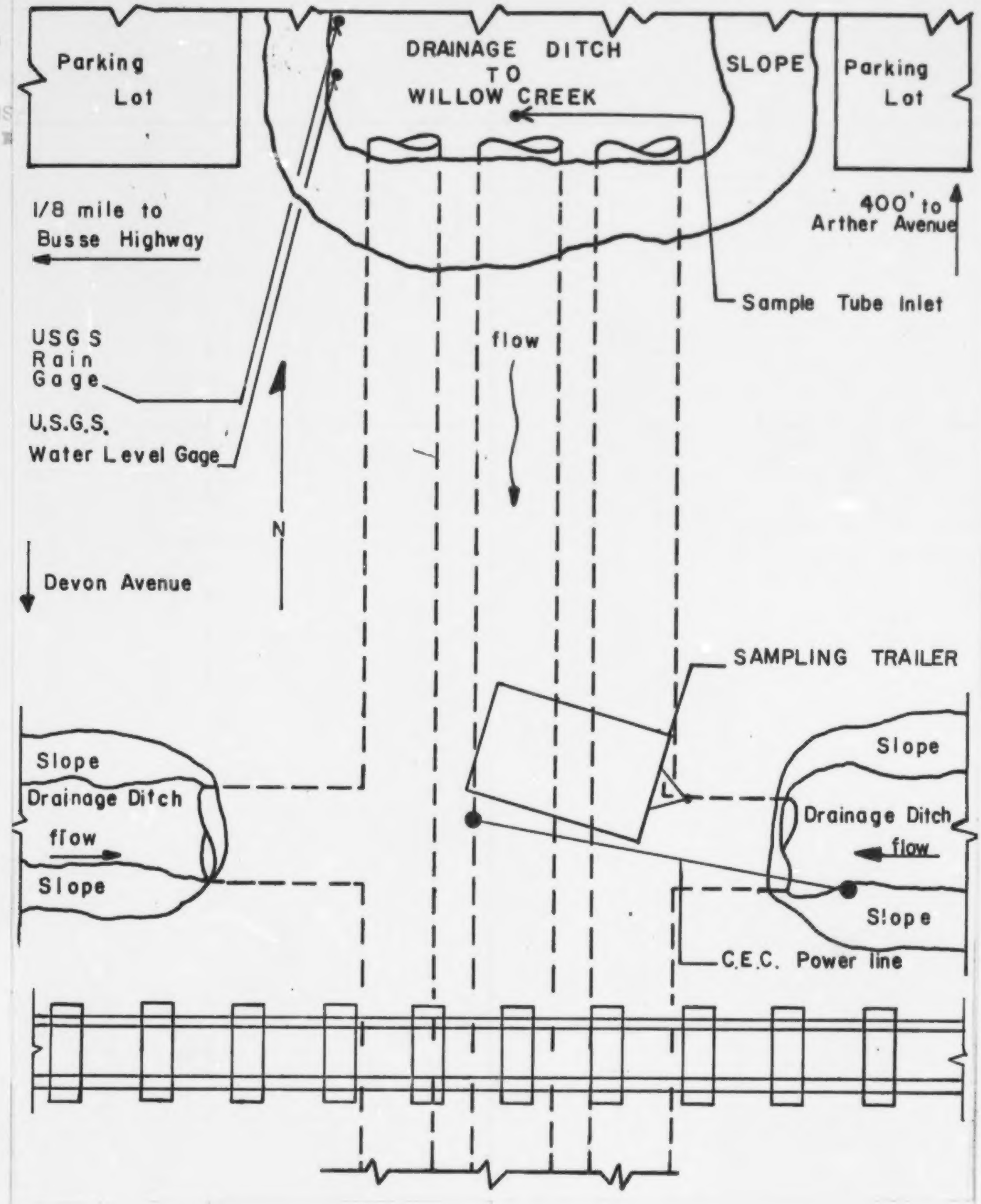

Figure VII-37. Chicago, Illinois, Centex, Elk Grove Village (IL0104), 236.8 ac (95.83 ha)

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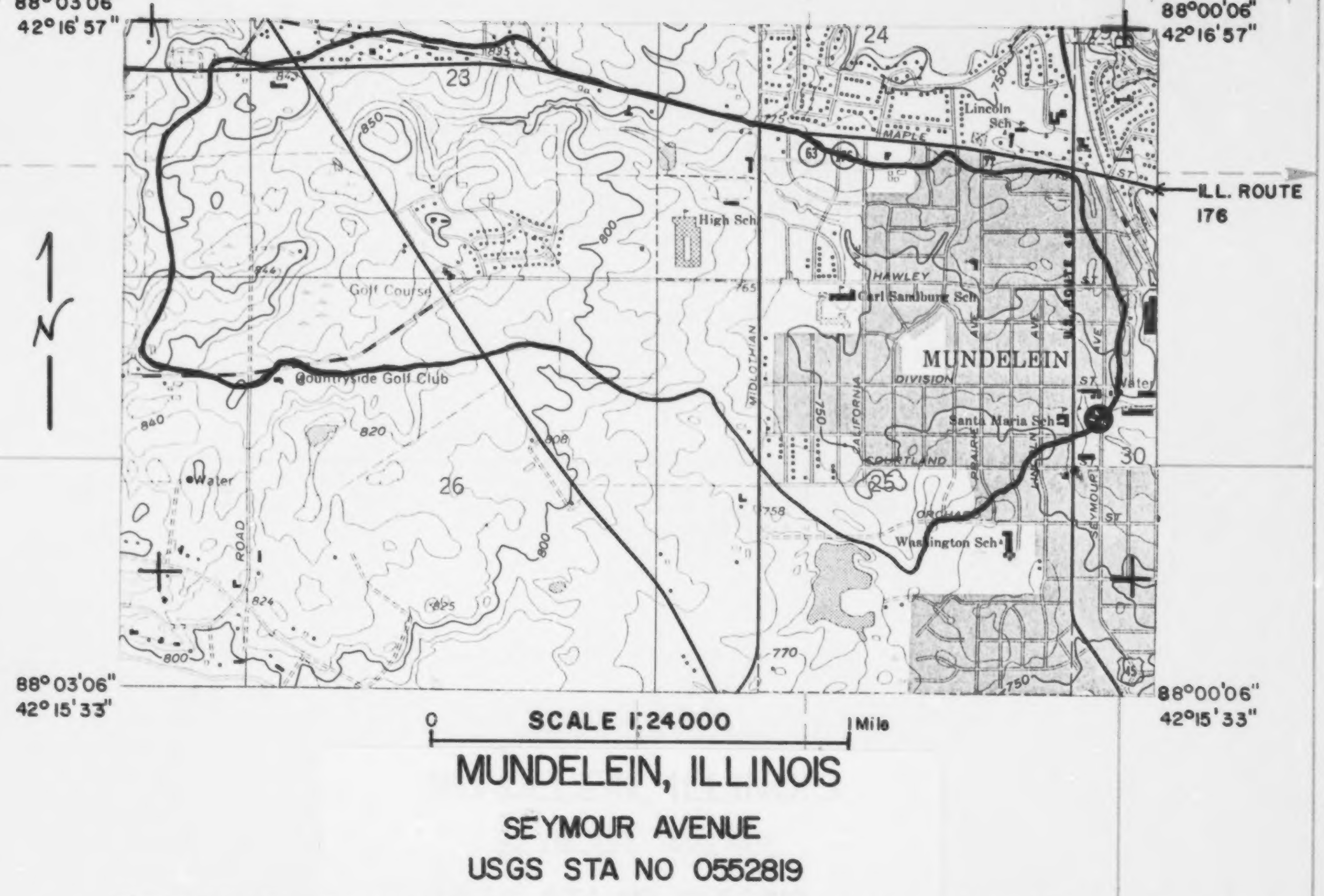

Figure VII-38. Chicago, Illinois, Seymour Avenue, Mundelein (IL0105), 1139.2 ac (461.03 ha)

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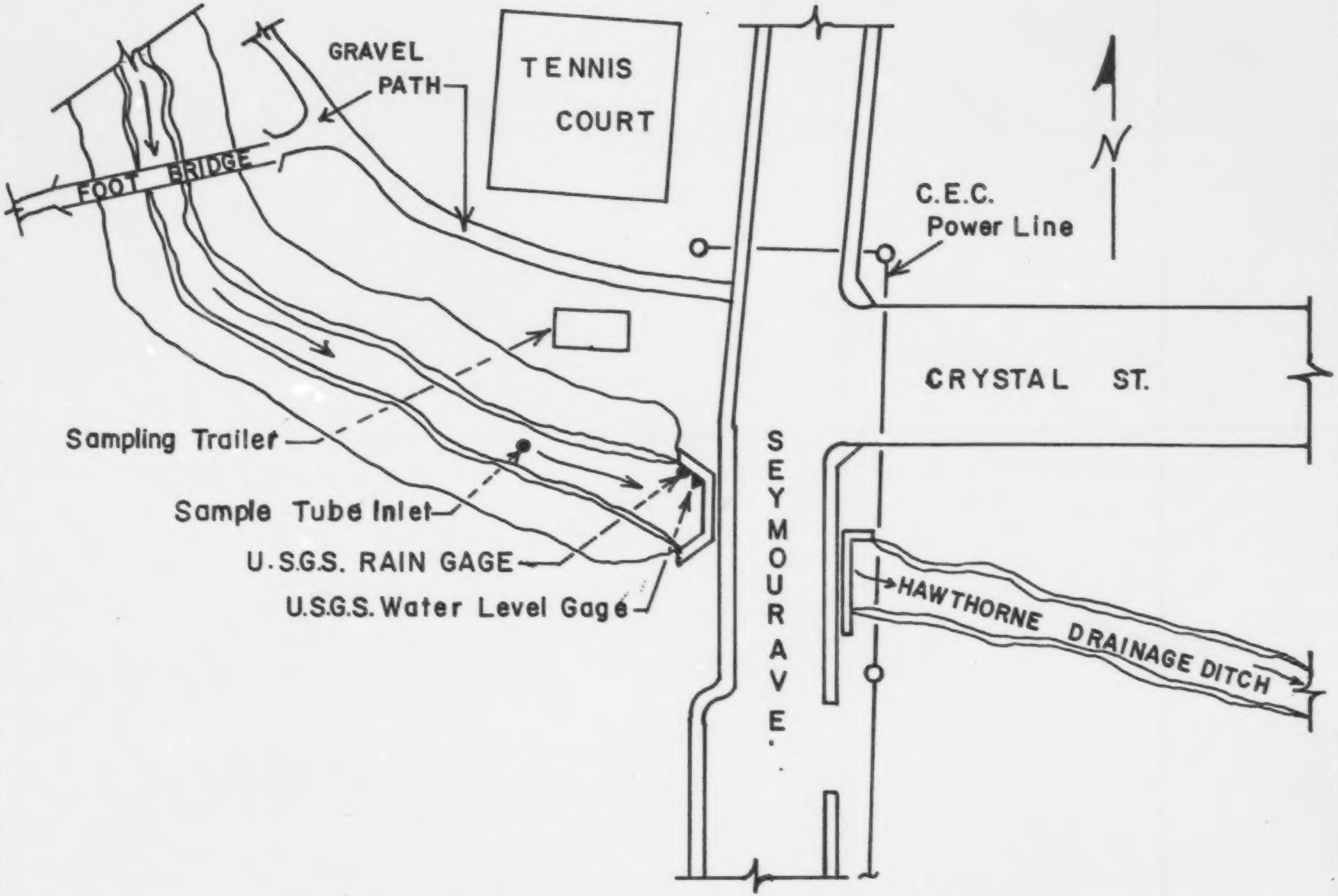

Figure VII-39. Chicago, Illinois, Seymour Avenue, Mundelein (IL0105), 1139.2 ac (461.03 ha)

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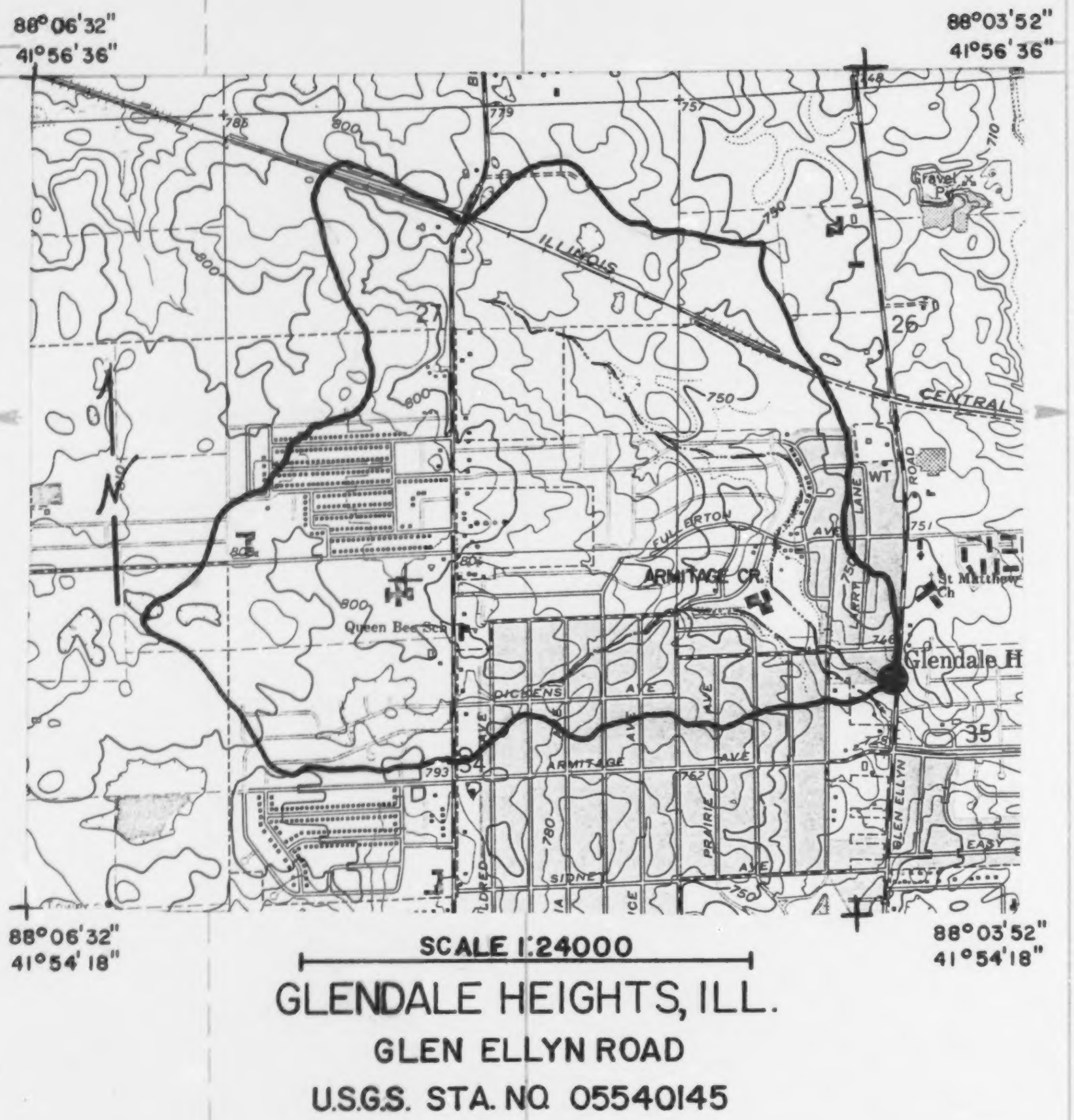

Figure VII-40. Chicago, Illinois, Glen Ellyn Road, Glendale Heights (IL0106), 992.0 ac (401.46 ha)

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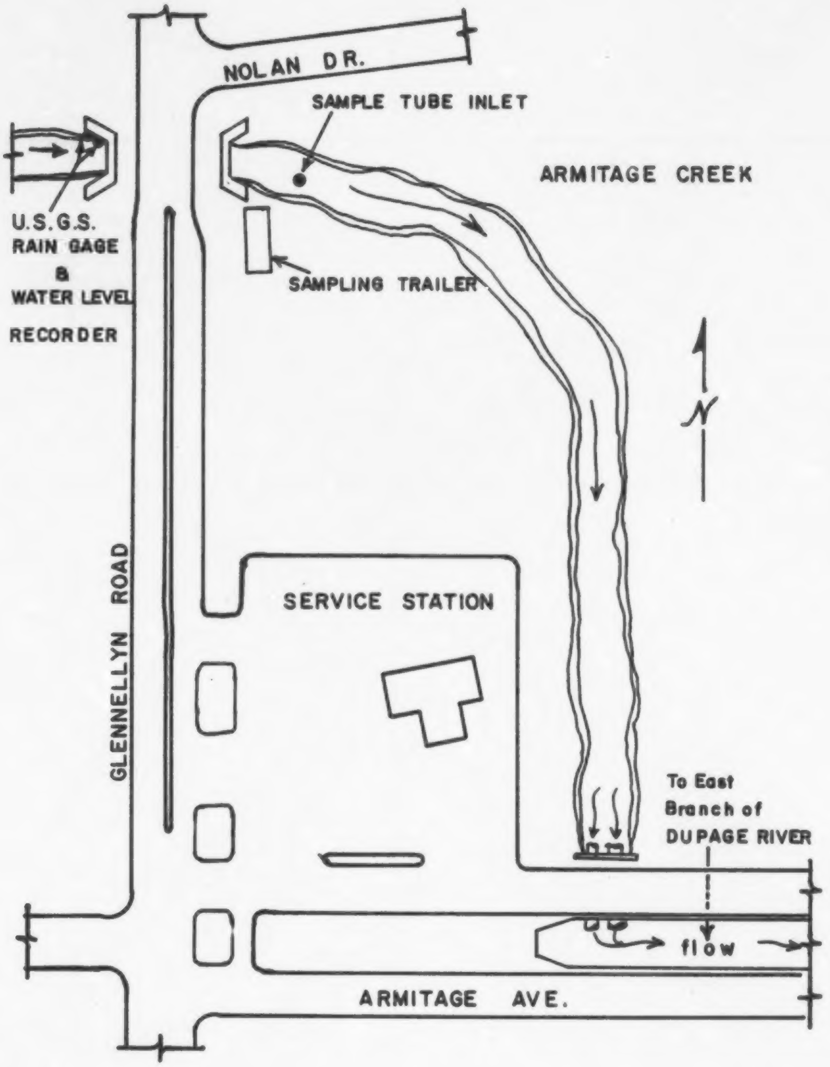

Figure VII-41. Chicago, Illinois, Glen Ellyn Road, Glendale Heights (IL0106), 992.0 ac (401.46 ha)

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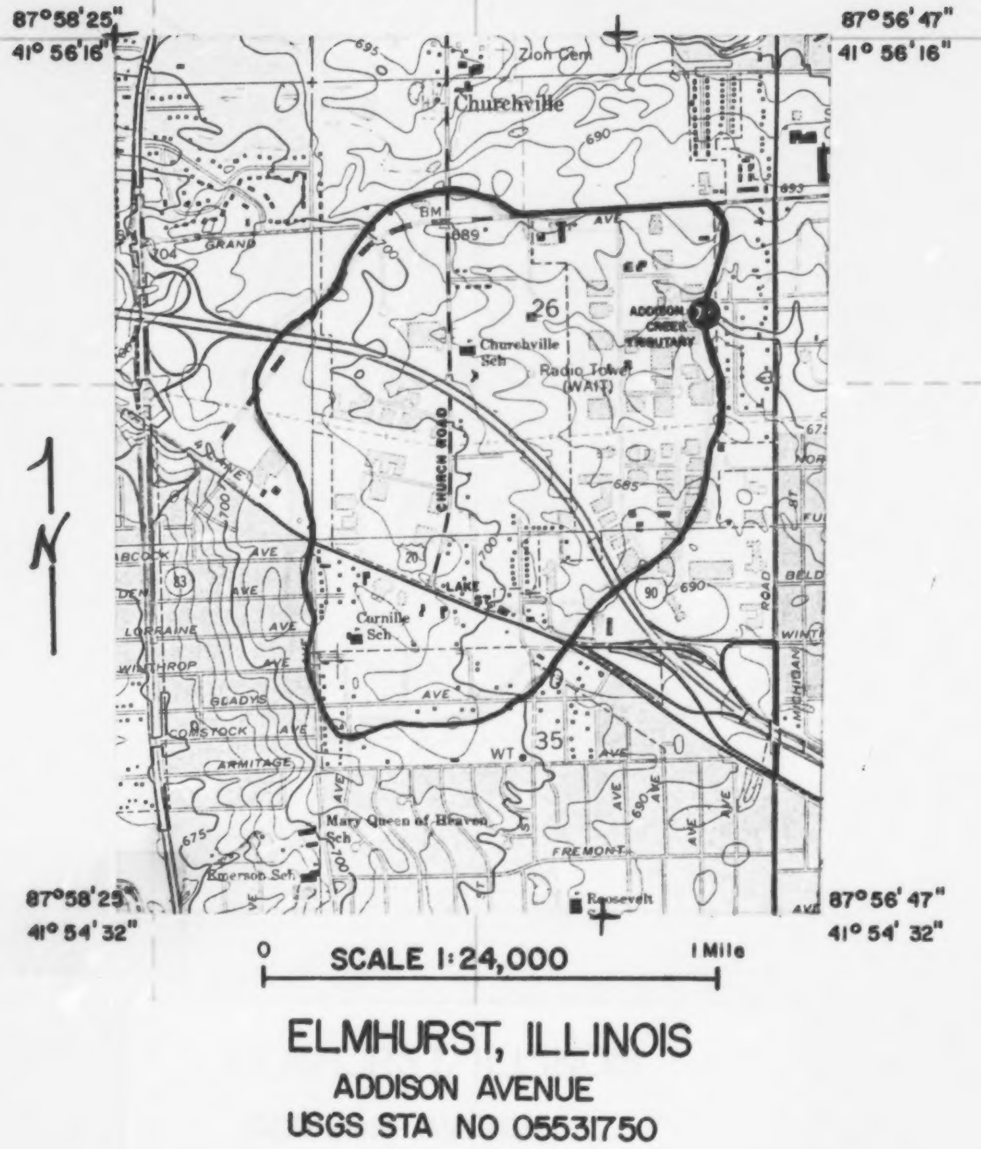

Figure VII-42. Chicago, Illinois, Addison Avenue, Elmhurst (IL0107), 601.6 ac (243.47 ha)

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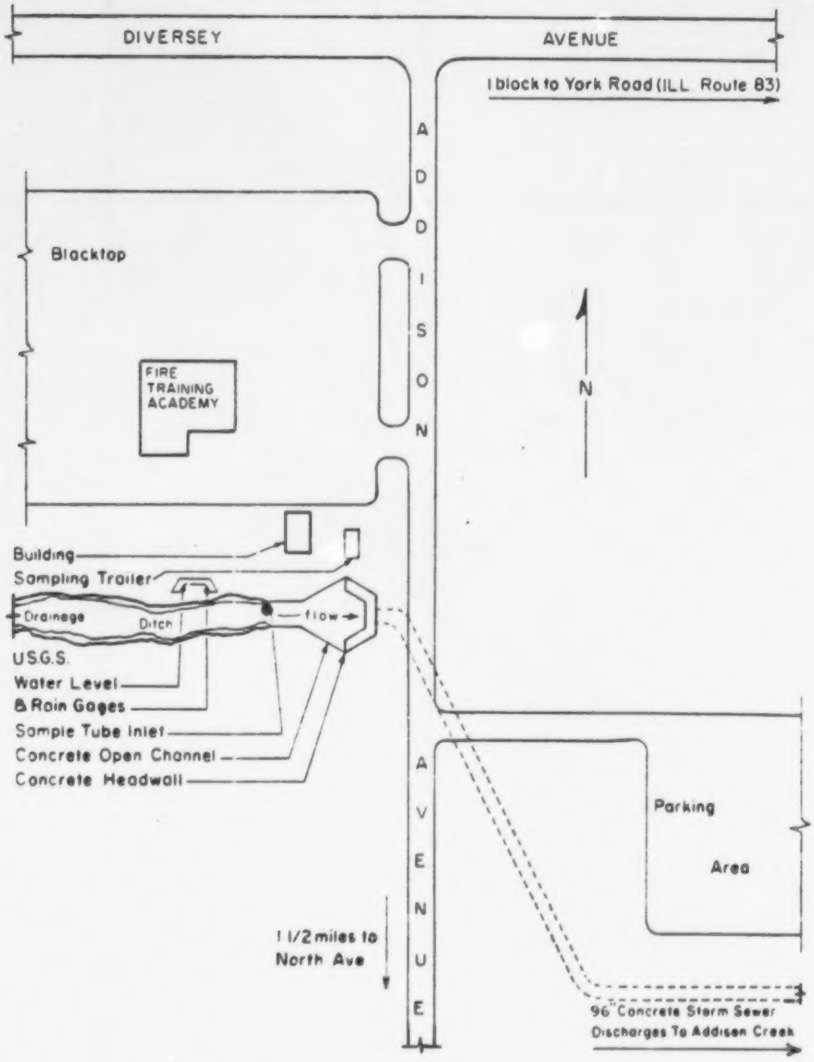

Figure VII-43. Chicago, Illinois, Addison Avenue, Elmhurst (IL0107), 601.6 ac (243.47 ha)

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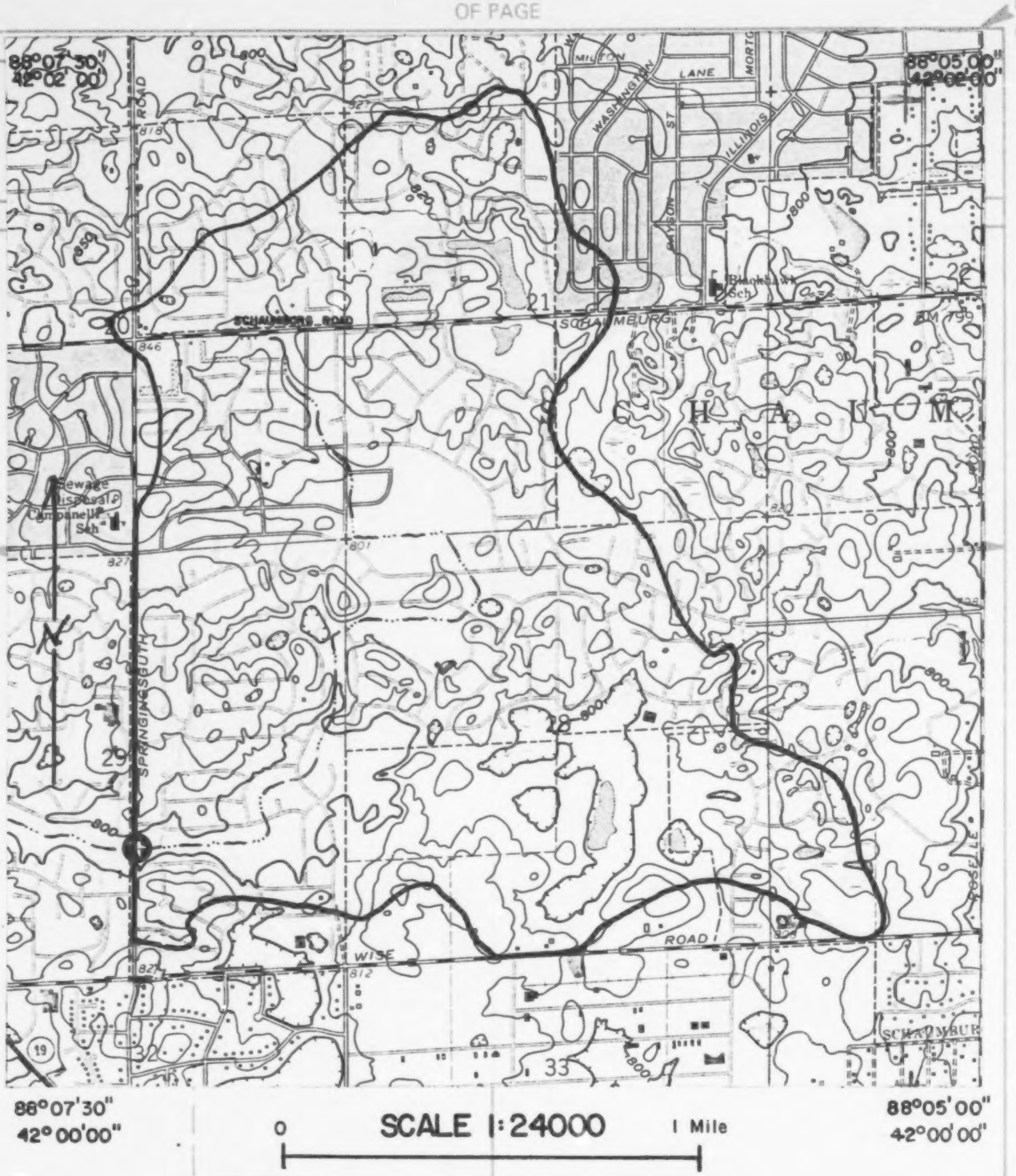

SCHAUMBURG, ILLINOIS
SPRINGINGSGUTH ROAD
USGS STA NO 05539850

Figure VII-44. Chicago, Illinois, Springingsguth Road, Schaumburg (IL0108), 1491.2 ac (603.39 ha)

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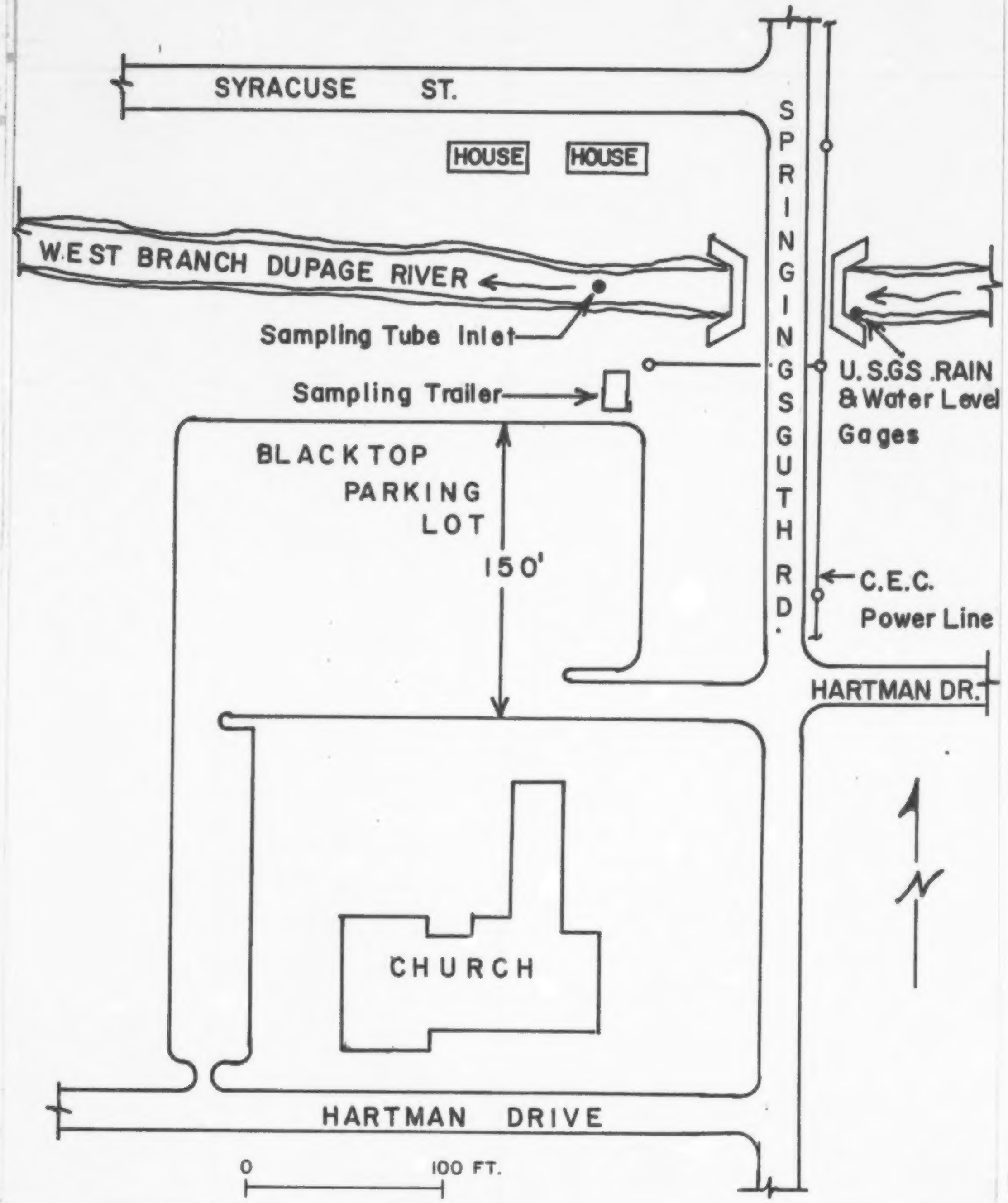

Figure VII-45. Chicago, Illinois, Springingsguth Road, Schaumburg (IL0108), 1491.2 ac (603.49 ha)

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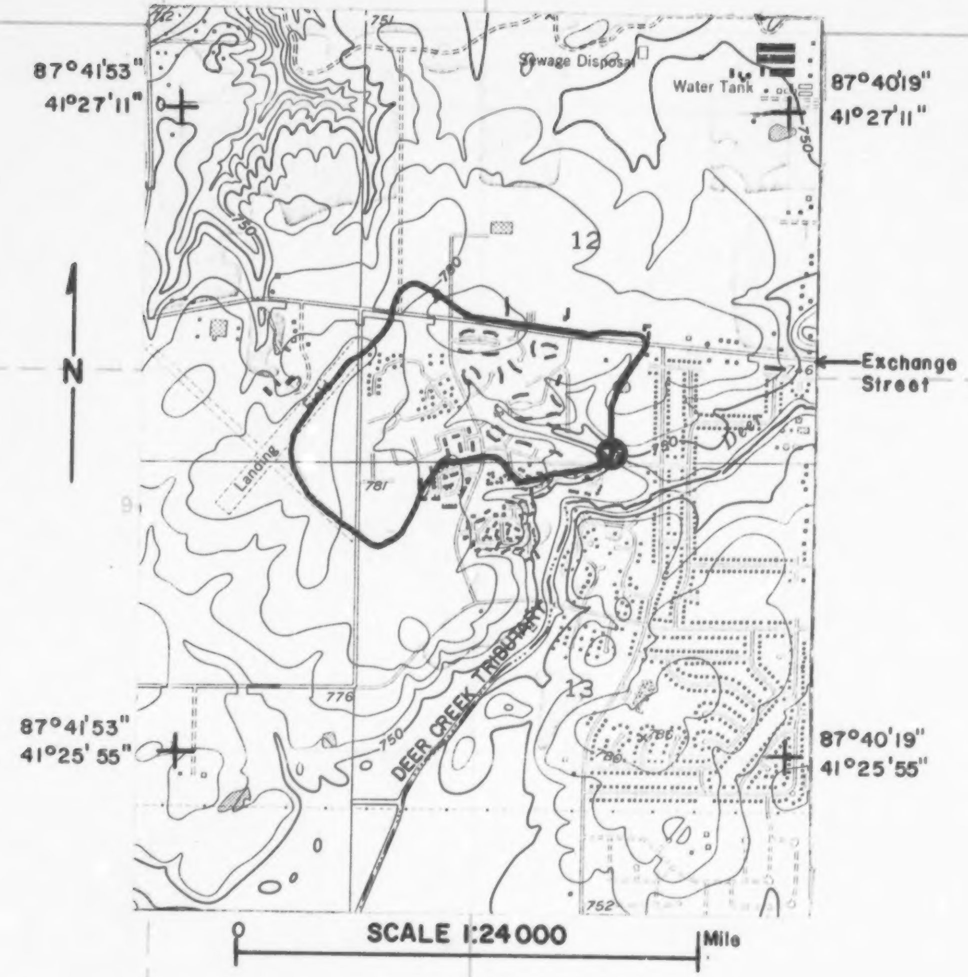

WILL COUNTY, ILLINOIS

PARK FOREST SOUTH

U.S.G.S. STA. NO. 05536217

Figure VII-46. Chicago, Illinois, Park Forest South (IL0109), 160.0 ac (64.75 ha)

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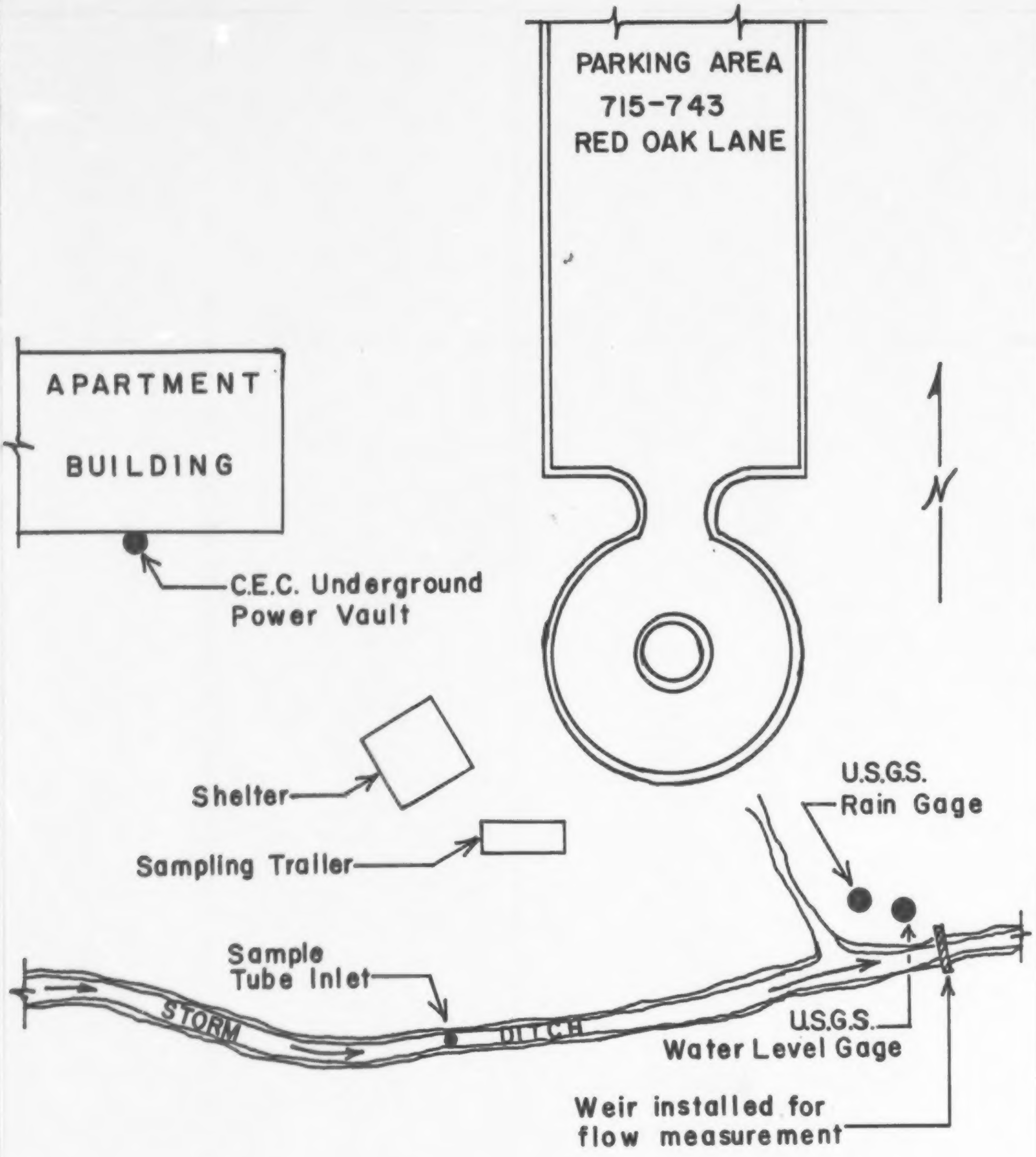

Figure VII-47. Chicago, Illinois, Park Forest South (IL0109), 160.0 ac (647.75 ha)

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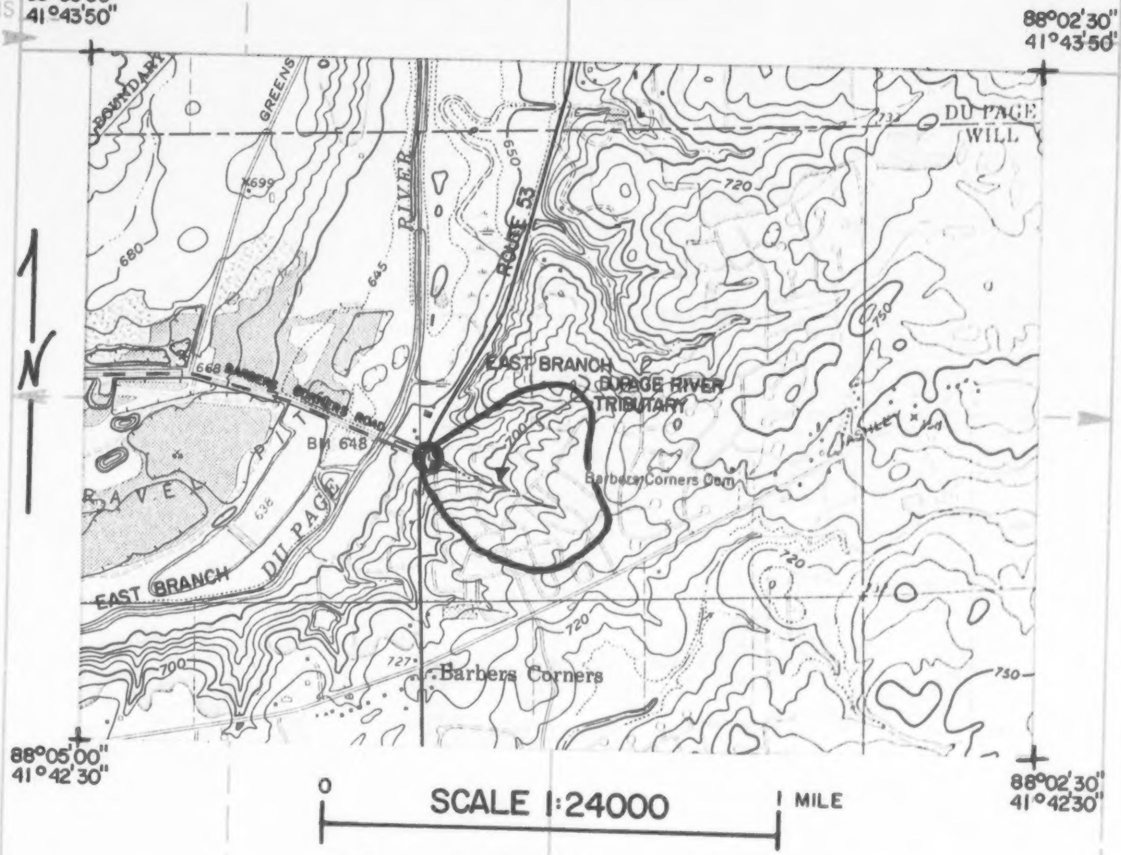

BOLINGBROOK, ILLINOIS

WINSTON VILLAGE

USGS STA NO 05540248

Figure VII-48. Chicago, Illinois, Winston Village, Bolingbrook (IL0110), 89.6 ac (36.26 ha)

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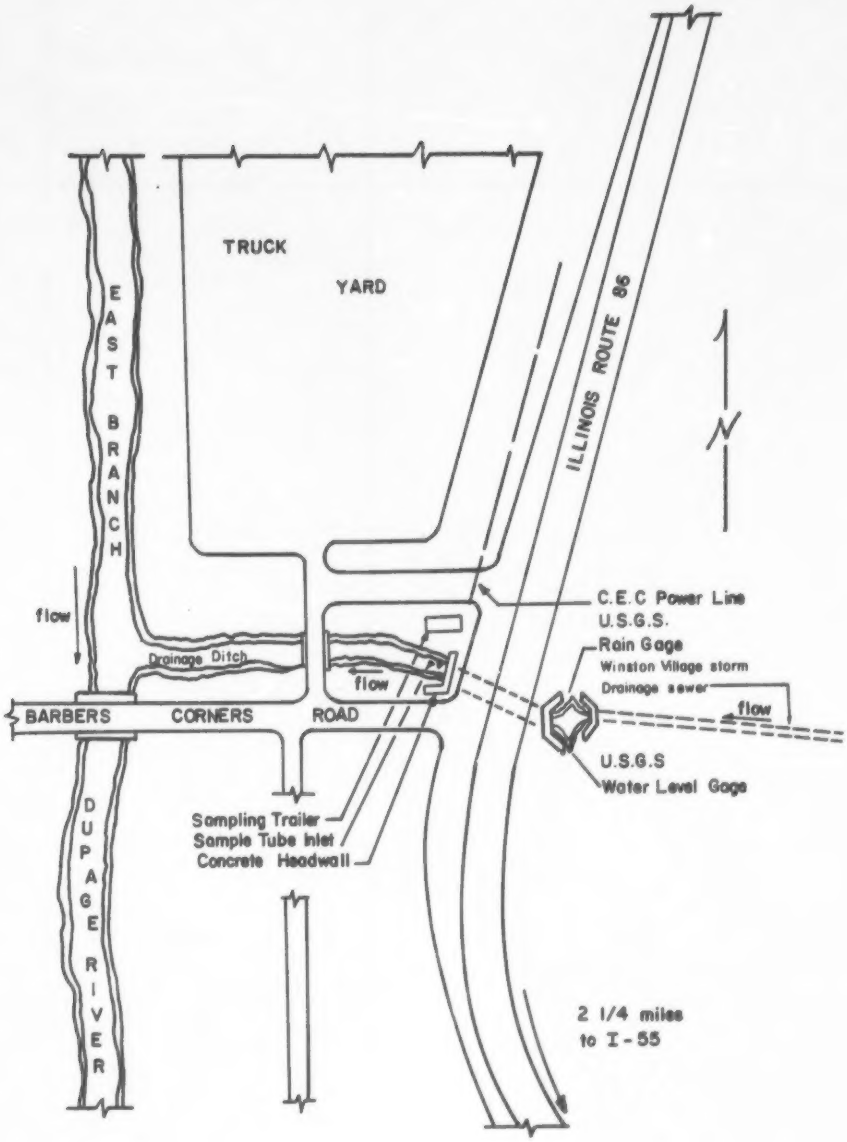

Figure VII-49. Chicago, Illinois, Winston Village, Bolingbrook (IL0110), 89.6 ac (36.26 ha)

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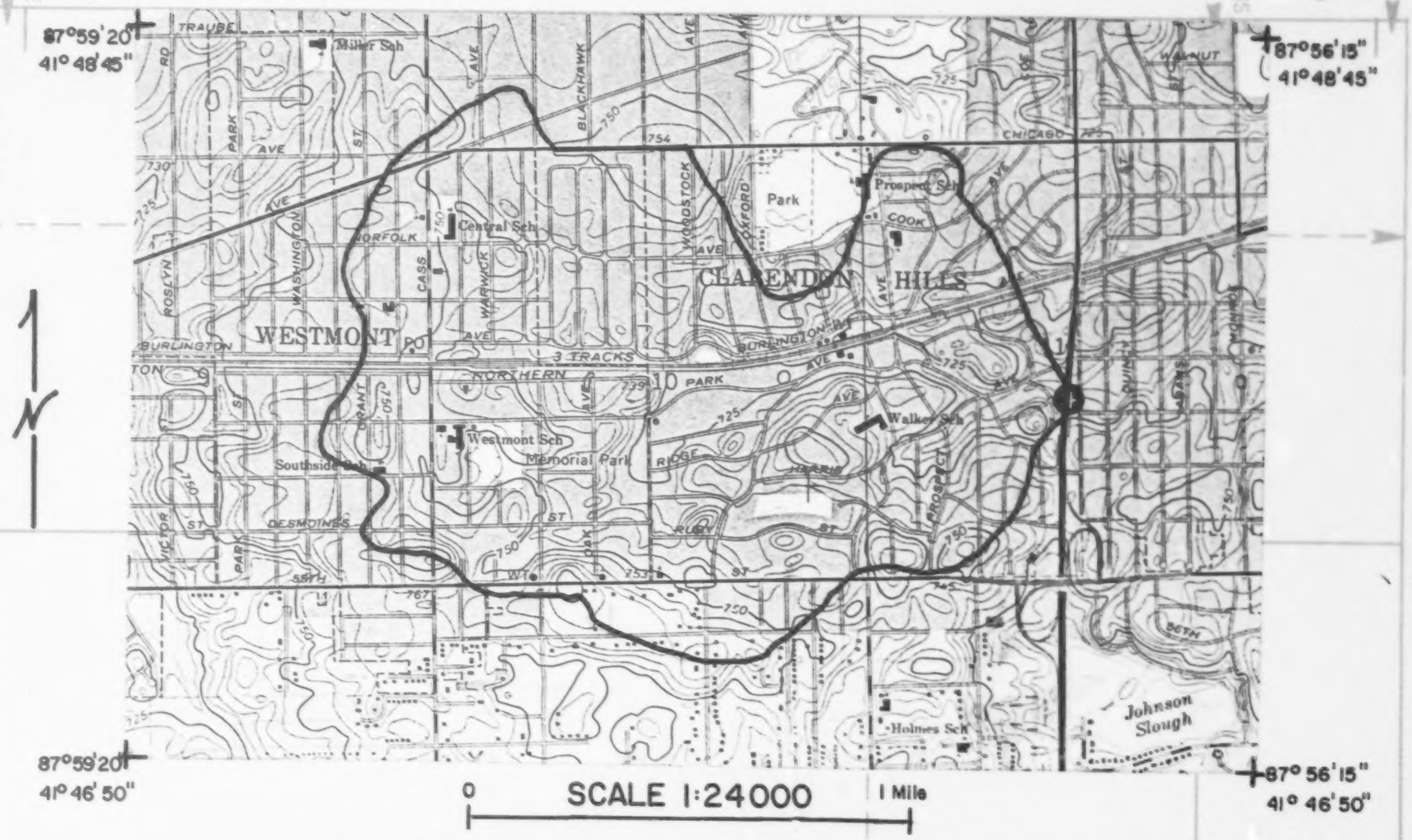

HIGHWAY 83, CLARENDON HILLS
FLAGG CREEK, ILLINOIS
USGS STA NO. 05532960

Figure VII-50. Chicago, Illinois, State Highway 83, Clarendon Hills Flagg Creek (IL0111), 972.8 ac (393.69 ha)

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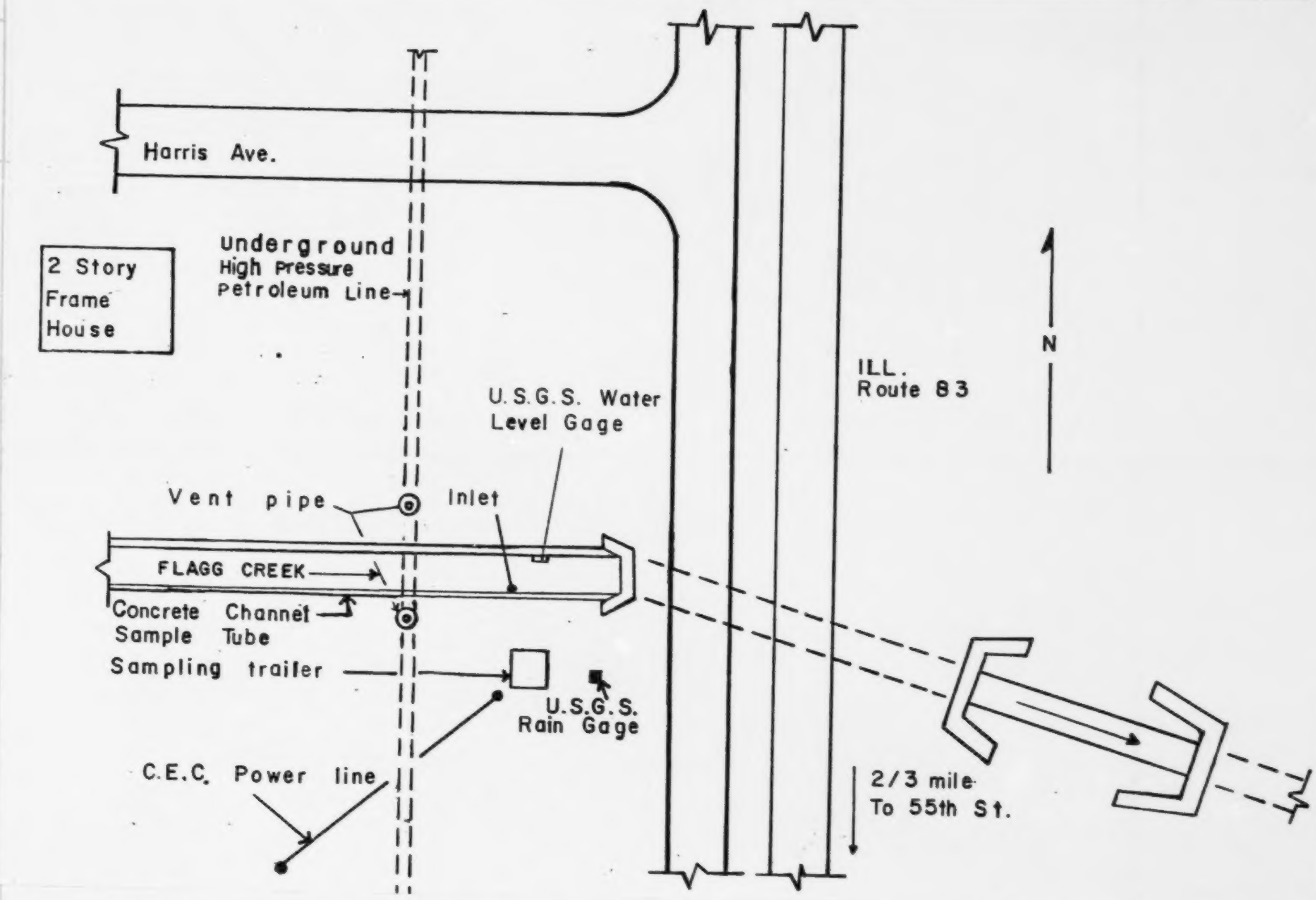

Figure VII-51. Chicago, Illinois, State Highway 83, Clarendon Hills Flagg Creek (IL0111), 972.8 ac (393.69 ha)

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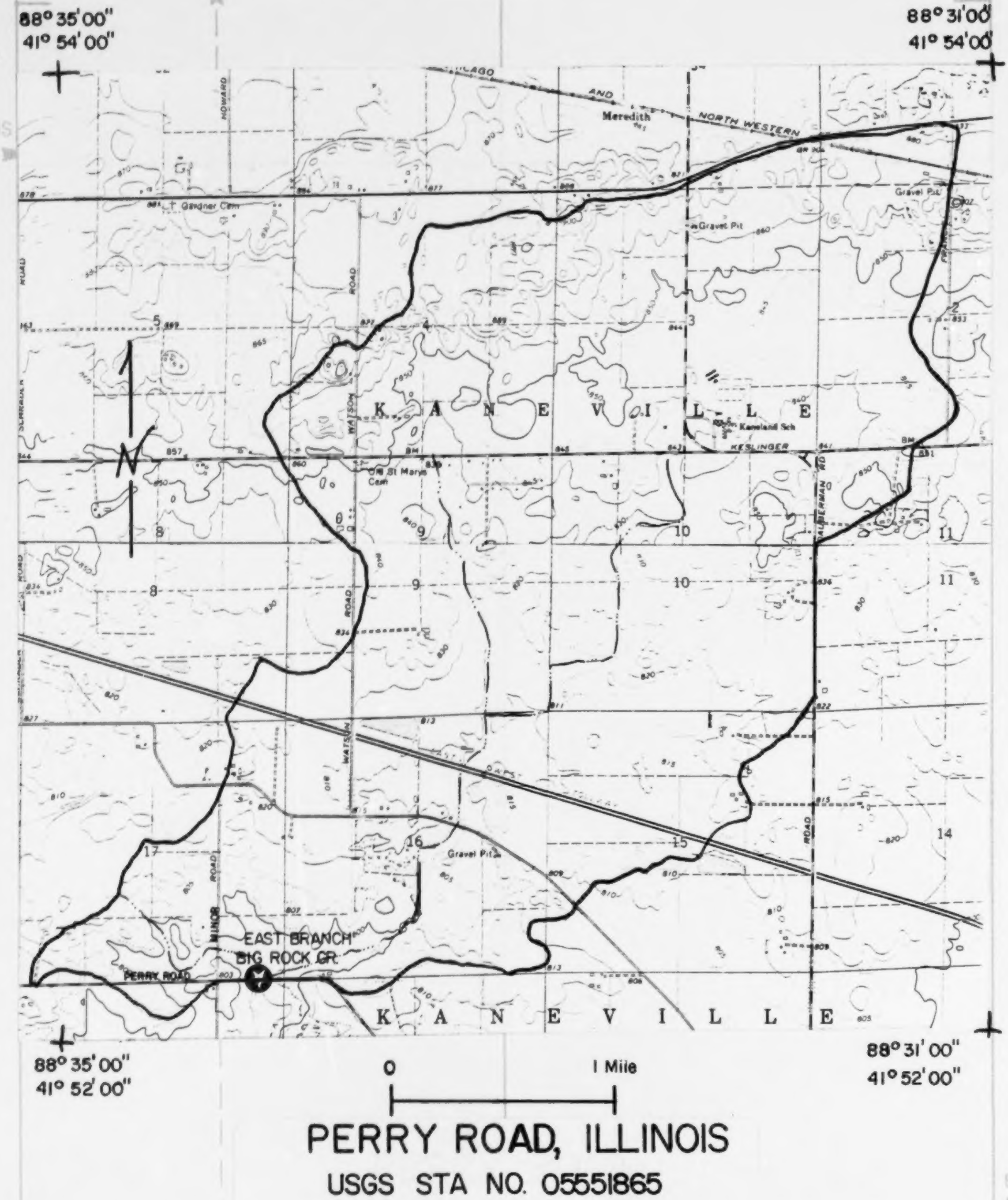

Figure VII-52. Chicago, Illinois, Perry Road (IL0112), 4435.2 ac (1794.9 ha)

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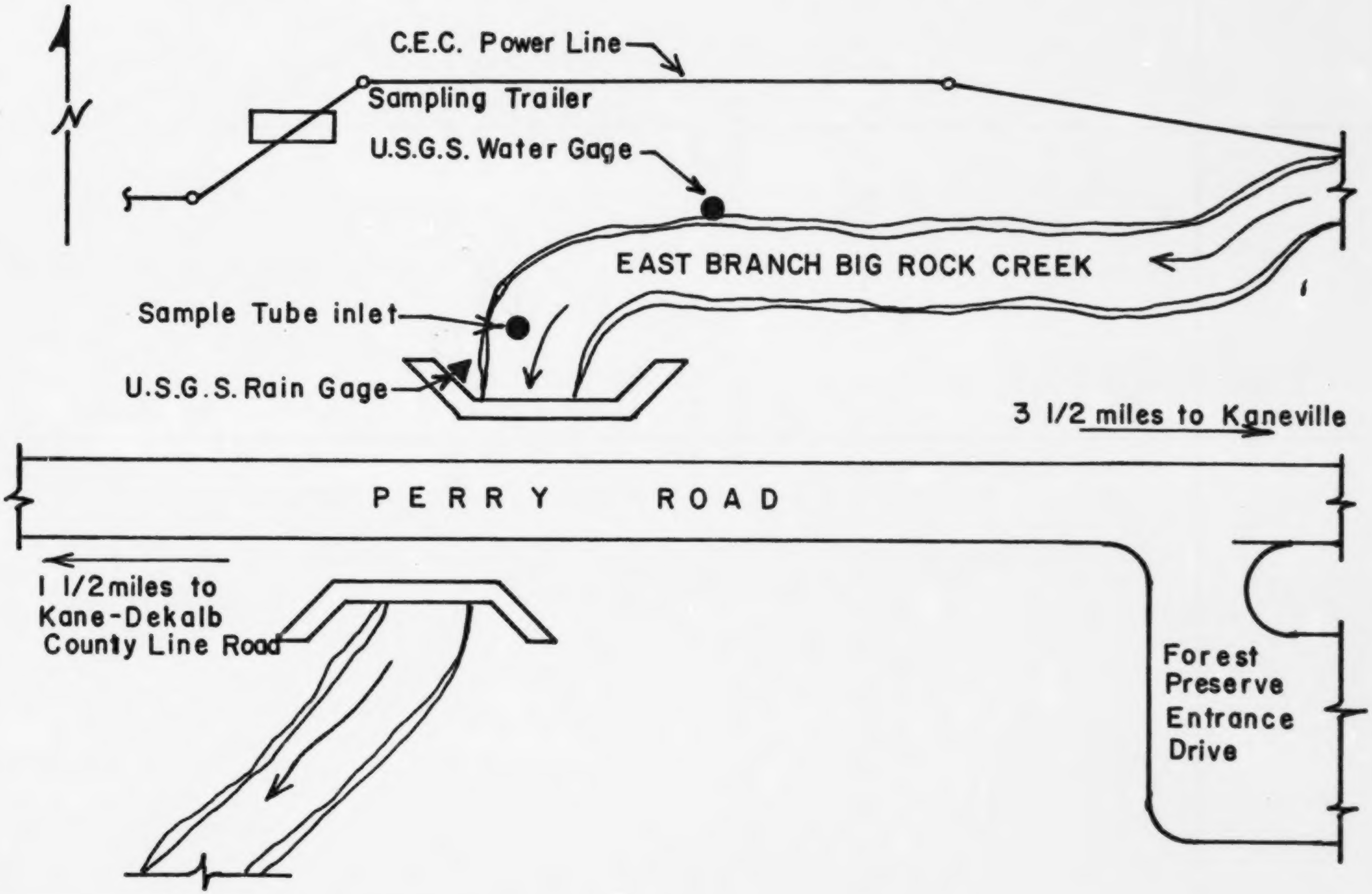

Figure VII-53. Chicago, Illinois, Perry Road (IL0112), 4435.2 ac (1749.9 ha)

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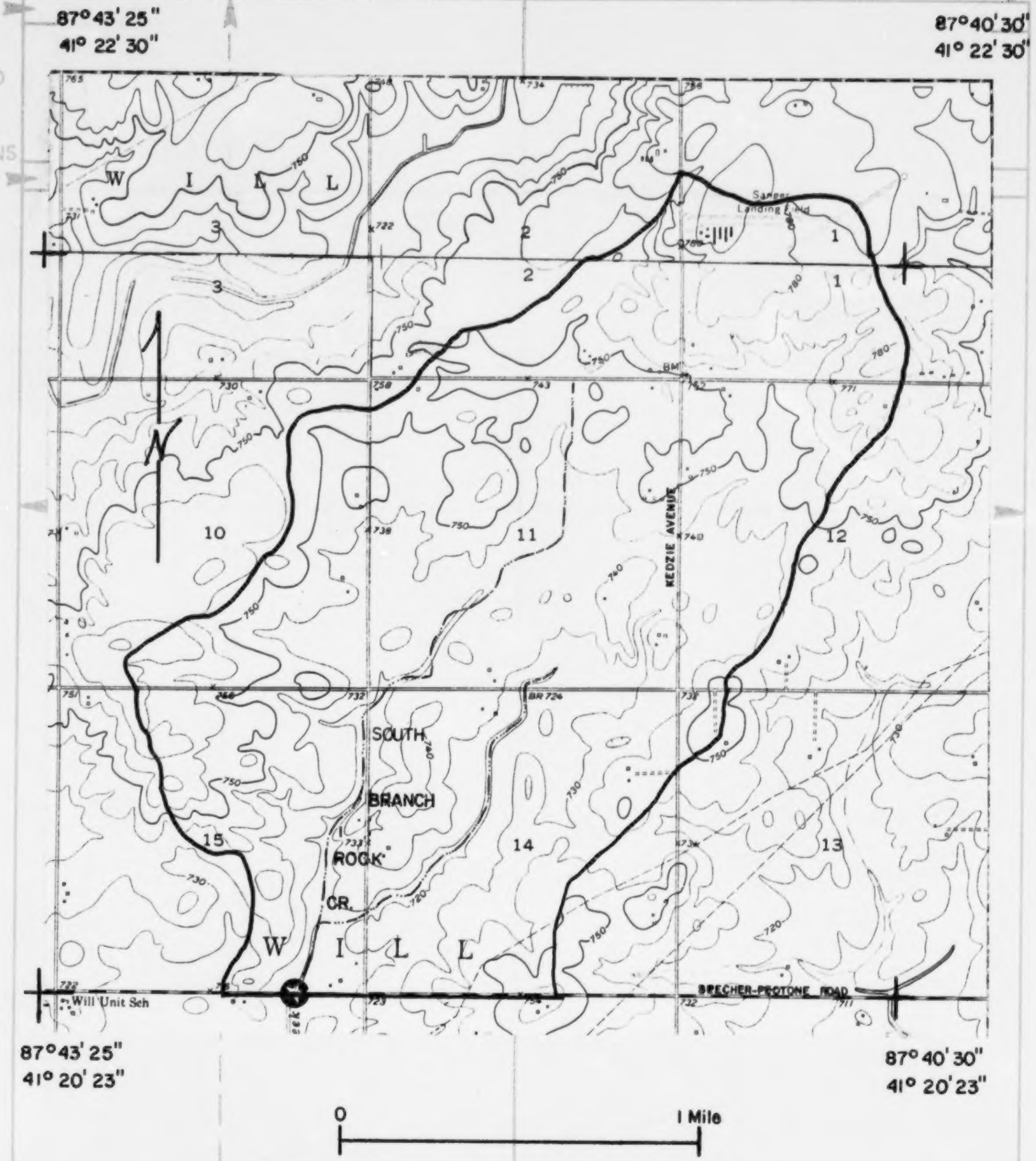

BEECHER-PEOTONE ROAD
ILLINOIS
USGS STA NO 05526273

Figure VII-54. Chicago, Illinois, Beecher-Peotone Road (IL0113), 2617.6 ac (1059.3 ha)

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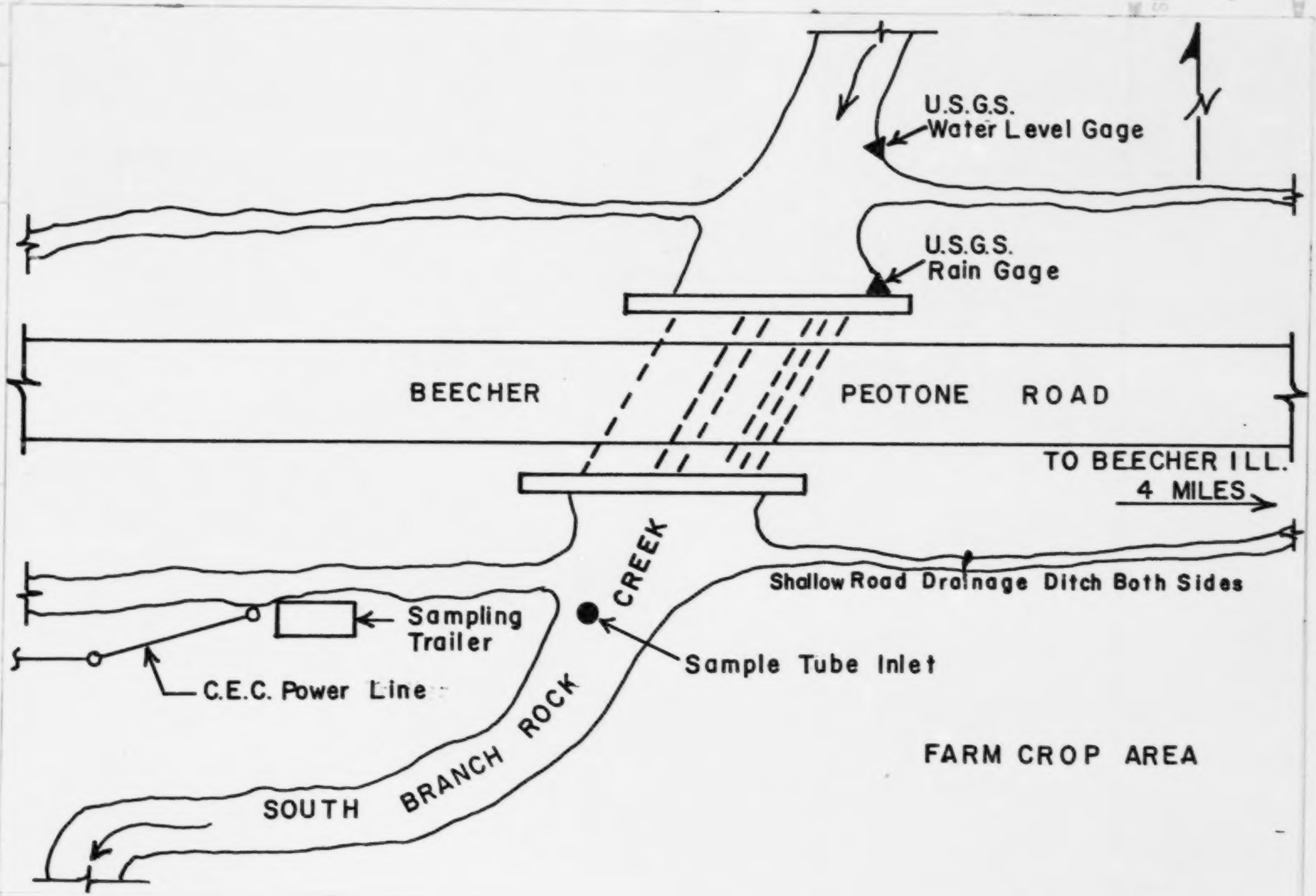

Figure VII-55. Chicago, Illinois, Beecher-Peotone Road (IL0113), 2617.6 ac (1059,3 ha)

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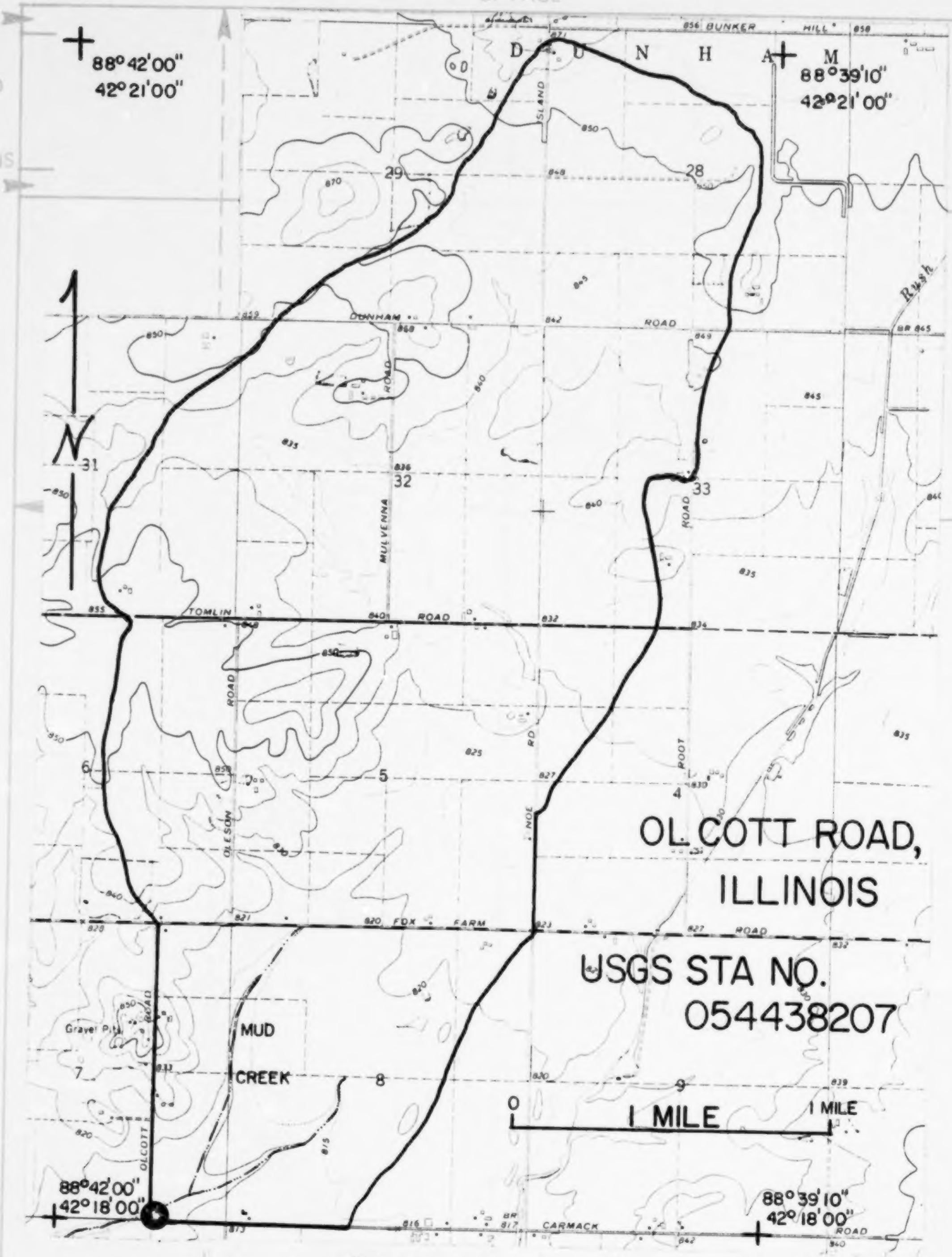

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Figure VII-56. Chicago, Illinois, Olcott Road (IL0114), 3456.0 ac (1398.6 ha)

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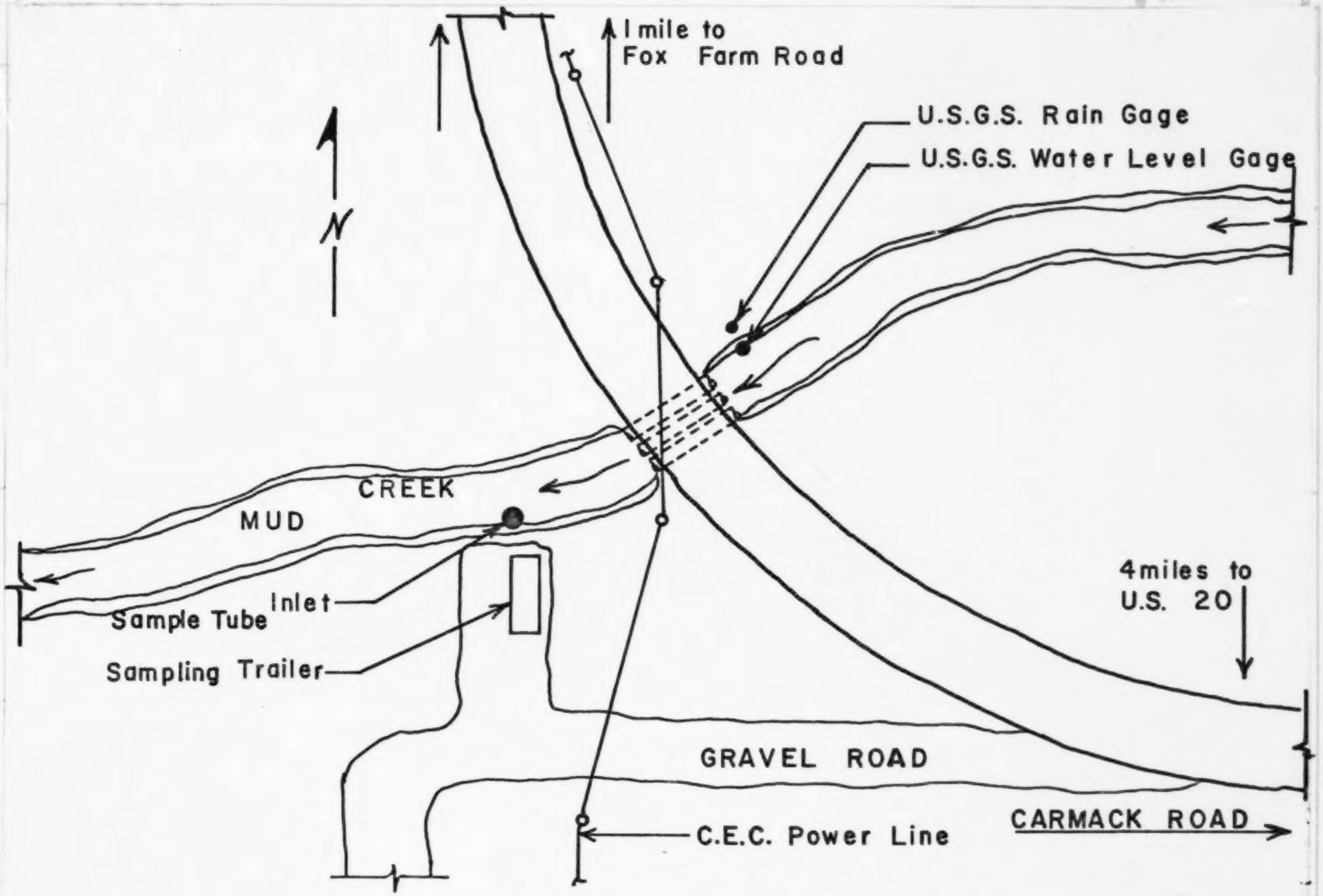

Figure VII-57. Chicago, Illinois, Olcott Road (IL0114), 3456.0 ac (1398.6 ha)

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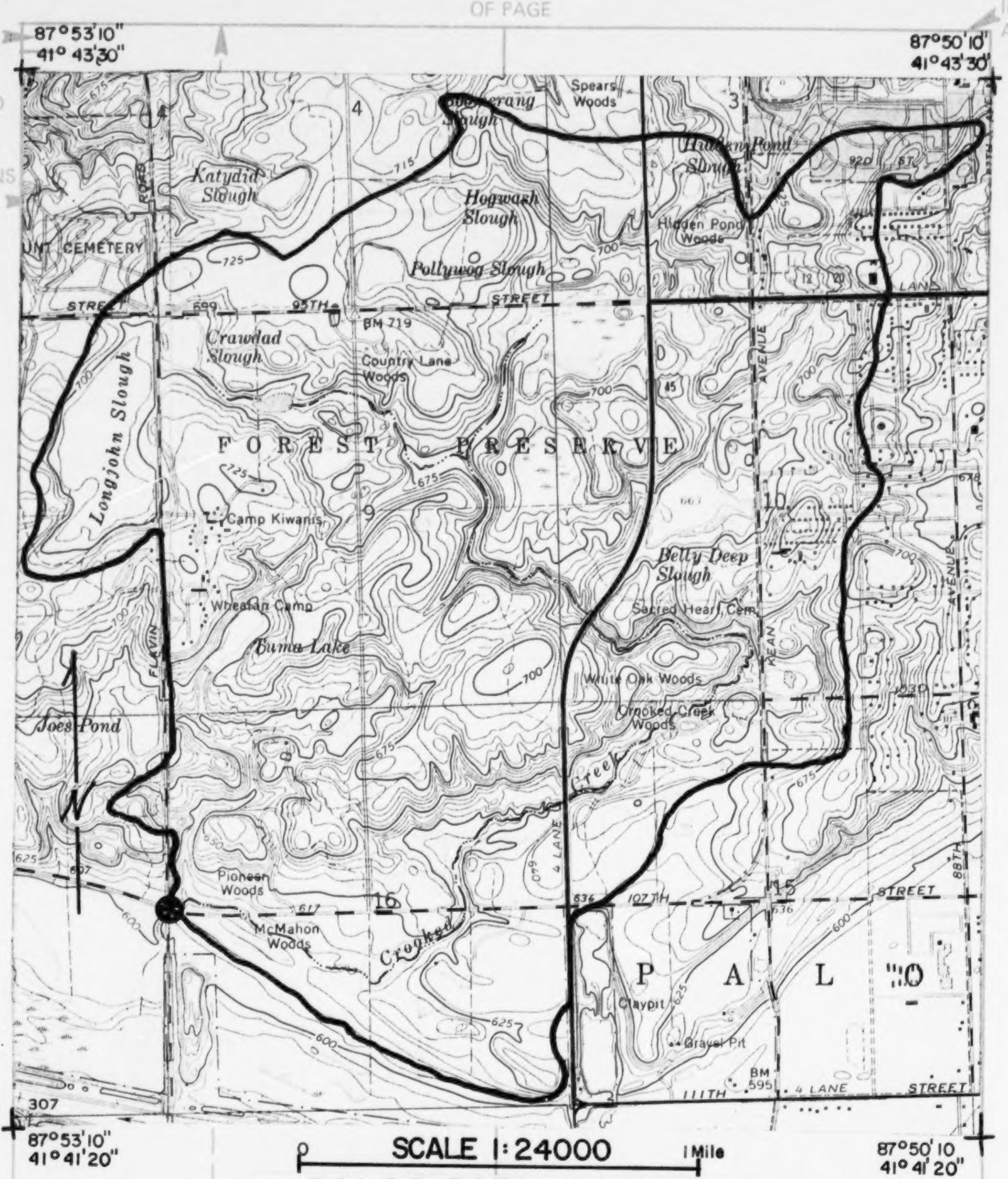

PALOS PARK, ILLINOIS
PIONEER WOODS
USGS STA NO 05536660

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Figure VII-58. Chicago, Illinois, Pioneer Woods, Palos Park (IL0115), 2304.0 ac (932.43 ha)

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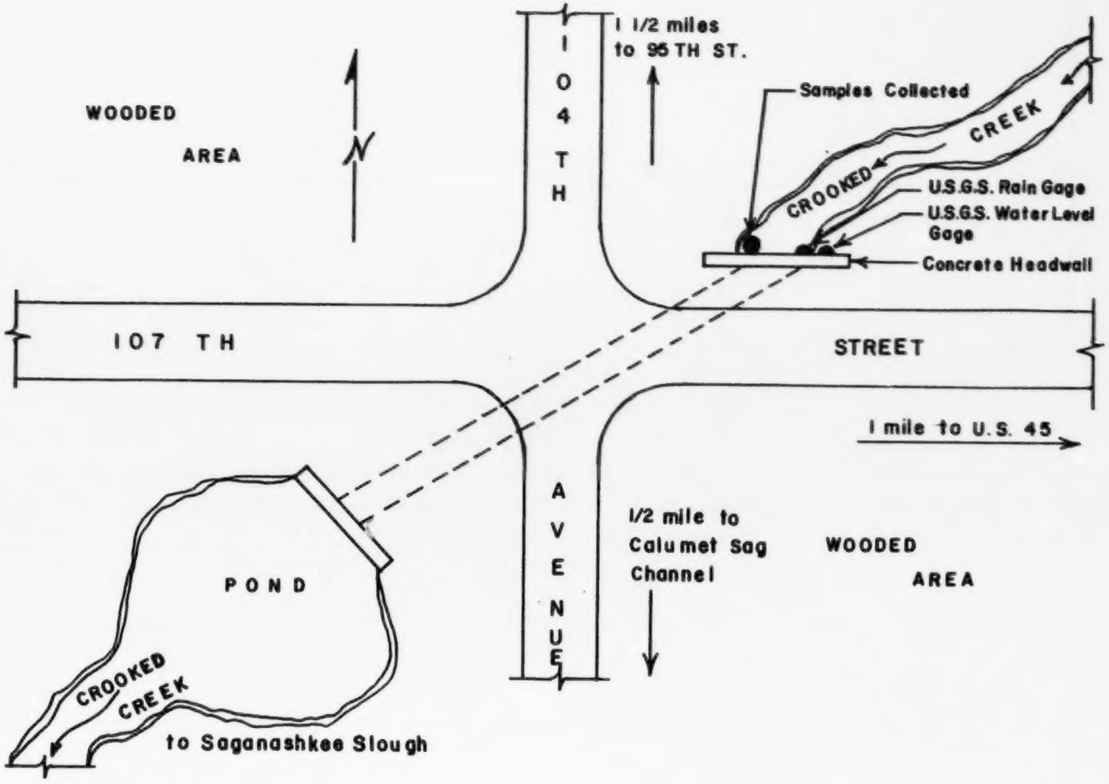

Figure VII-59. Chicago, Illinois, Pioneer Woods, Palos Park (IL0115), 2304.0 ac (932.43 ha)

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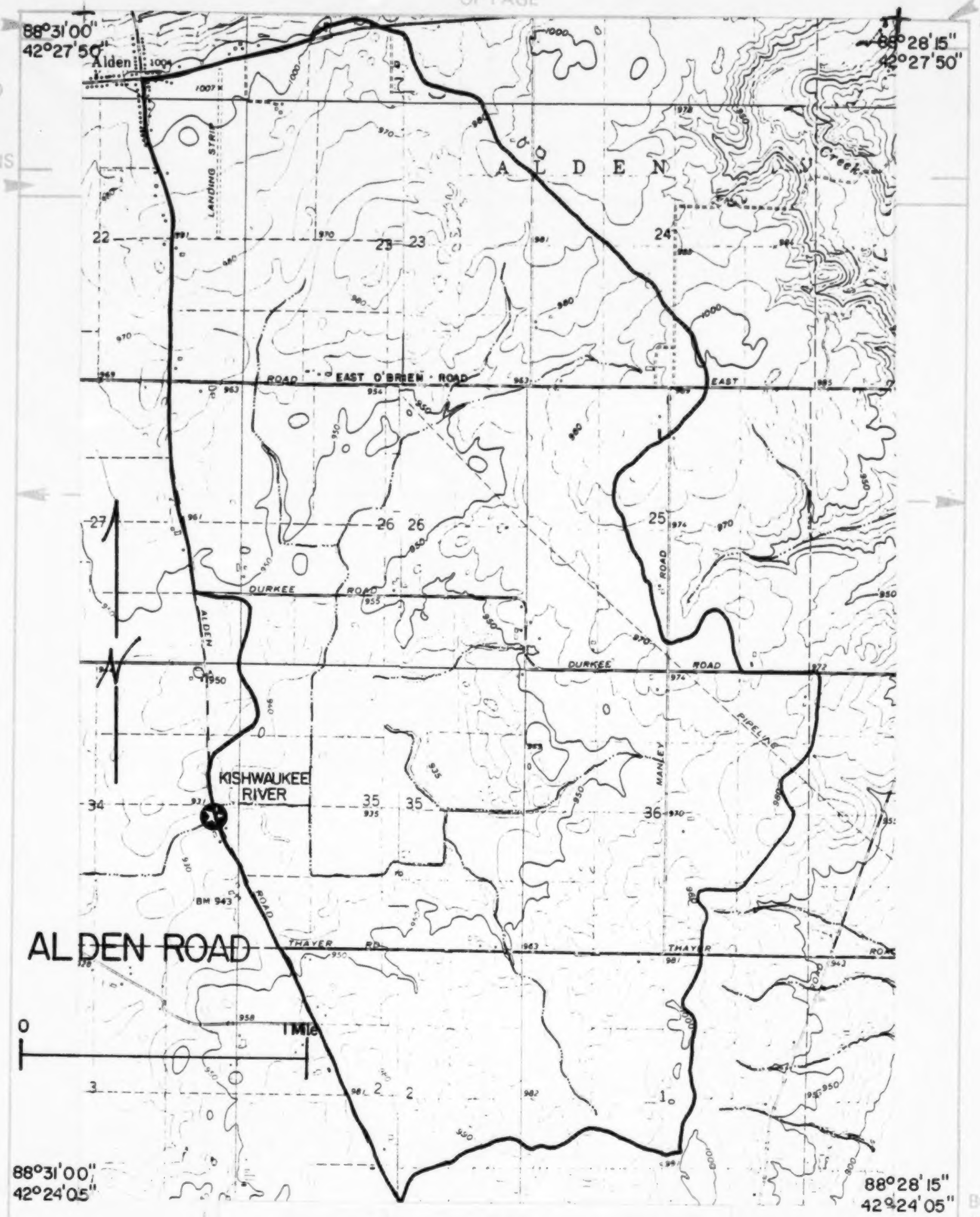

Figure VII-60. Chicago, Illinois, Alden Road (IL0116), 4000.0 ac (1618.8 ha)

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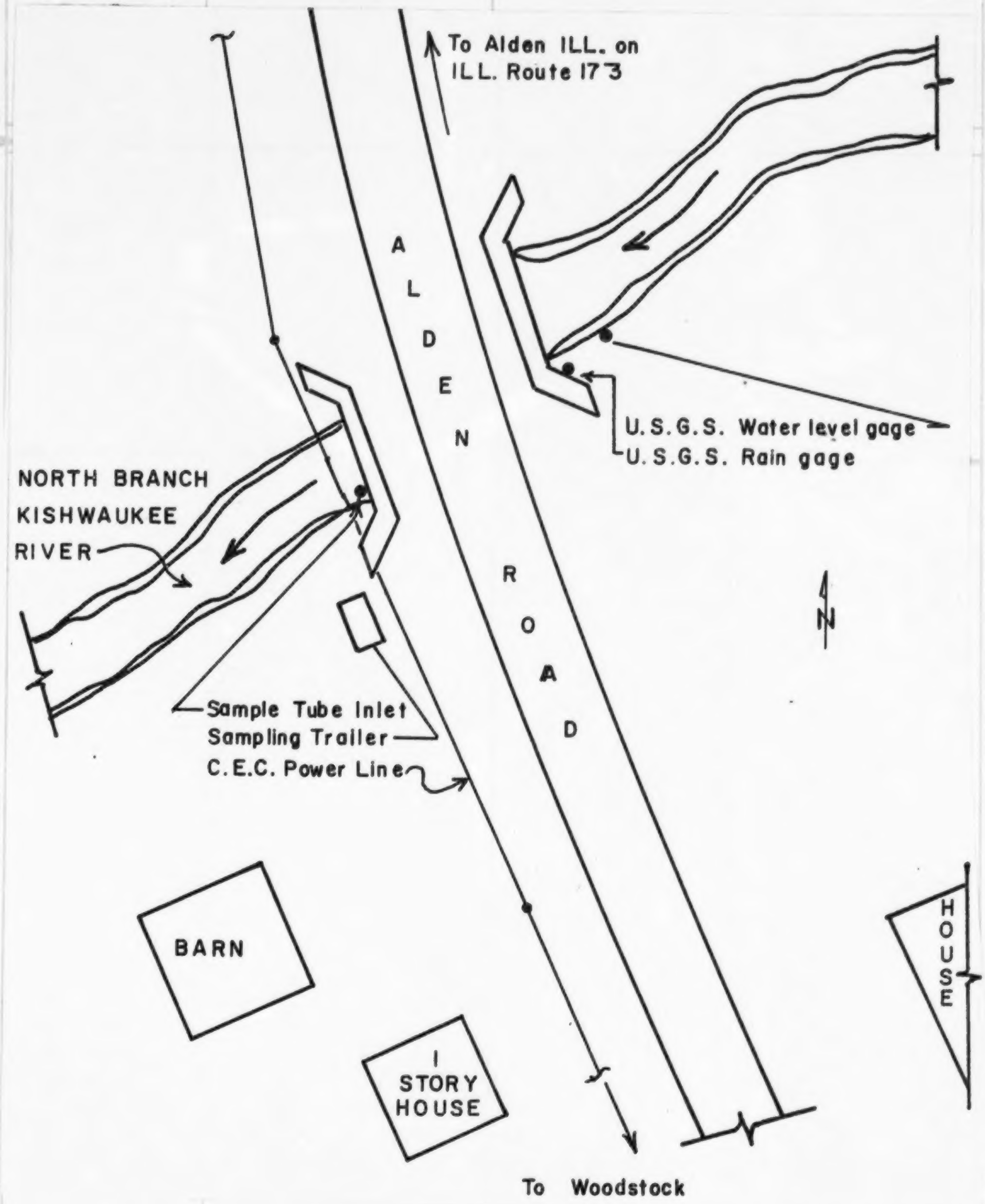

Figure VII-61. Chicago, Illinois, Alden Road (IL0116), 4000.0 ac (1618.6 ha)

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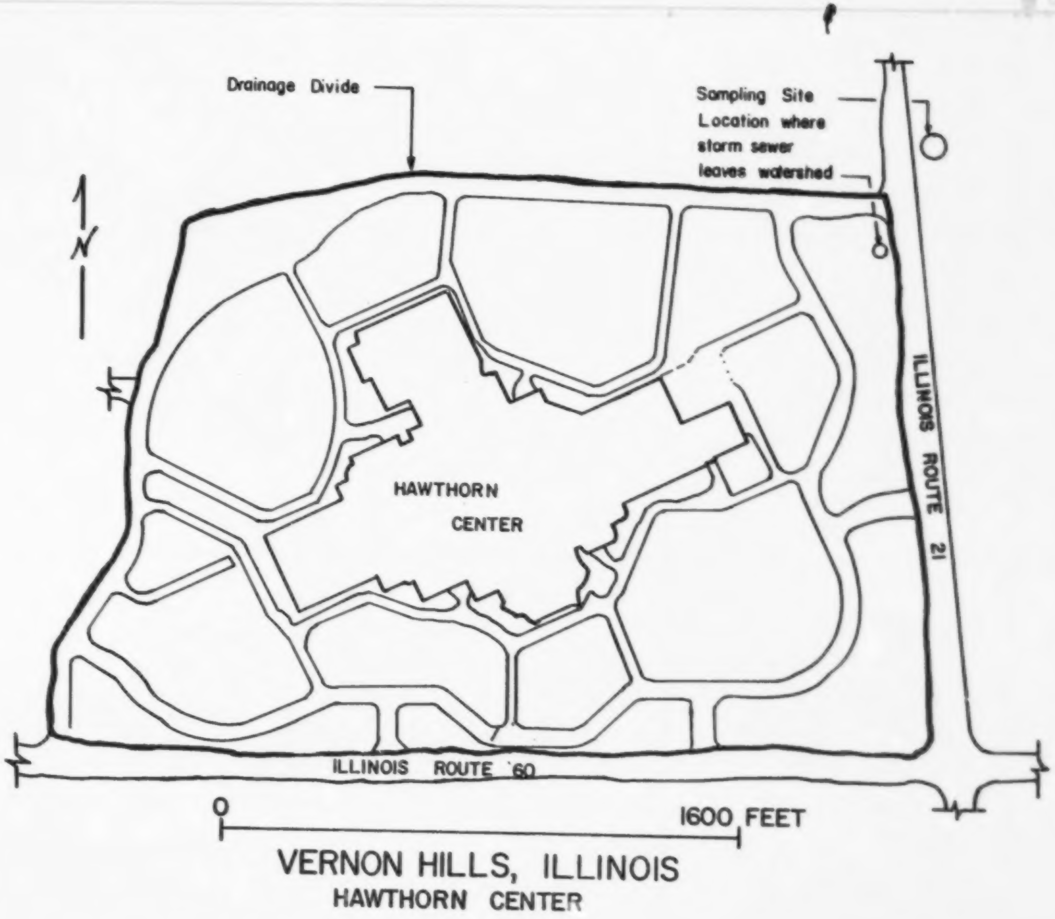

Figure VII-62. Chicago, Illinois, Hawthorn Center, Vernon Hills (IL0117), 96.0 ac (38.85 ha)

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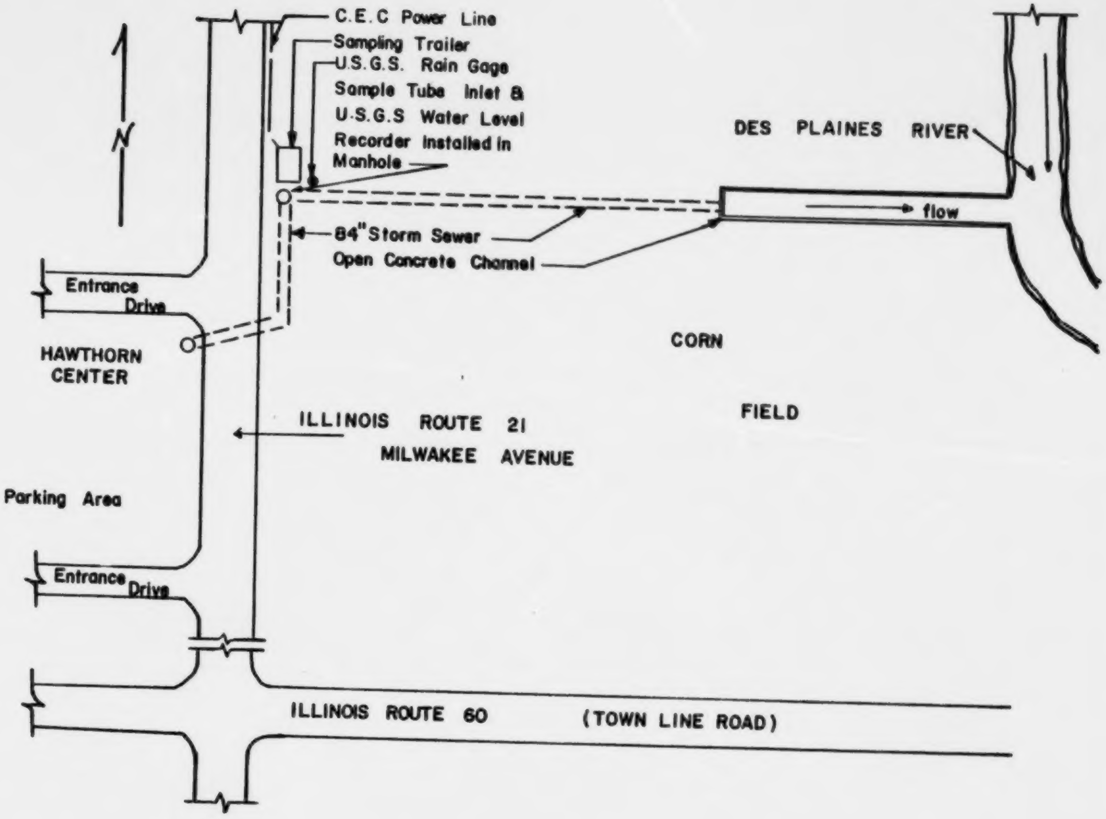

Figure VII-63. Chicago, Illinois, Hawthorn Center, Vernon Hills (IL0117), 96.0 ac (38.85 ha)

DENVER, COLORADO

Commencing in May of 1967, the City and County of Denver, the Urban Drainage and Flood Control District, and the Denver Regional Council of Governments pursued the collection of basic data on runoff characteristics from urban basins. The City and County of Denver installed three recording rain gages and two runoff recording stations in the Harvard Gulch Basin (Wright-McLaughlin Engineers). The Urban Drainage and Flood Control District in cooperation with the USGS operated rainfall and runoff stations elsewhere. In 1969 and 1970 there were 16 basins that were measured in conjunction with the USGS (71,72). Data from reference 71 contain only rainfall and runoff and cover five catchments. The Harvard Gulch data have been used for testing of the Colorado Urban Hydrograph Procedure (CUHP). Tucker (42) refers to these catchments. Ellis (209) gives data about urban storm runoff from three localities in the Denver Metropolitan Area. The data were collected in 1977. Various monitoring problems limit the data taken to only 19 events from which only 7 have corresponding quality analyses. All the above data were keypunched at the University of Florida.

State and City Code: CO 01

Table VII-55. Catchments-Denver

No	Name	Area,ac (ha)	Imperviousness (%)	Drainage System	Average Slope(%)	Land Use
1	Big Dry Creek Trib., Littleton	606 (245.25)	a_1	Storm^{b_1}		75% single-family dwellings; 25% parks and open-space.
2	North Avenue, Denver Federal Center, Lakewood	76.7 (31.04)	a_2	Storm^{b_2}		30% multi-family dwellings; 20% commercial; 50% undeveloped land.
3	Thirty-sixth Street, Denver	2246 (908.96)	a_3	Storm^{b_3}		37% multi-family; 37% mixed single and multi-family; 20% commercial; 6% parks
4	South Platte Trib. No. 2, Northglenn	307 (124.2)	2	Storm^{b_1}	3.3	5% urbanized; 50% farmed
5	Harvard Gulch	2956 (1196.3)	40	Storm	1.0	Fully developed urban residential area.
6	Concourse D Drain, Stapleton Airport, Denver	73 (29.5)	100	Storm	.5	Basin was being developed in 1970. Full development (100%) in 1971, area of 120 acres at that time.

Table VII-55 Catchments-Denver (Cont'd)

No	Name	Area,ac (ha)	Imperviousness (%)	Drainage System	Average Slope(%)	Land Use

a_1 = Hydraulically connected to drainage system 15%, other 10%.

a_2 = Hydraulically connected to drainage system 30%, other 10%.

a_3 = Hydraulically connected to drainage system 40%, other 25%.

b_1 = Street gutters and ditches.

b_2 = Street gutters to central trunk storm sewer.

b_3 = Storm sewer system.

b_4 = Street gutters.

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Table VII-56 Quantity Data-Denver

No	Catchment	Flow		Rain				No. of Storms	Period
		Type of Flow Measurements	Sampling Interval min	Gages Used		Type	Sampling Interval min		
				No. in Catch.	No. near Catch.				
1	Big Dry Creek Trib. Littleton	$f_{1,3,7}$	2-5	3	-	r_1	2-5	6	5/76-6/77
2	North Avenue, Lakewood	$f_{1,2,8}$	2-5	1	-	r_1	2-5	5	4/77-5/77
3	Thirty sixth Street Denver	$f_{1,2,9}$	5	3	-	r_1	5	7	5/76-7/77
4	South Platte Trib. No. 2, Northglenn	$f_{4,5}$	5^a	1	-	r_2	5^a	5	5/69-6/70
5	Harvard Gulch	f_6	5^a	3	-	r_3	5^a	4	7/67-6/69
6	Concourse D Drain, Stapleton Airport, Denver	f_4	5^a	1	-	r_2	5^a	2	6/70-7/70

a - Interval may also be a multiple of five minutes.

Table VII-56 Quantity Data - Denver (Cont'd)

f_1r_1 - Tipping bucket gauge (0.25 mm) and venturi flume described in Smoot, Davidian and Billings, (26).

f_2 - Gage height - discharge relationships derived using V-notch veirs and their theoretical ratings.

f_3 - Gage height - discharge relationship derived using the step-backwater approach (Shearman, 1976) (208), supplemented by current-meter measurements.

f_4,r_2 - Each gaging station is equipped with two Fischer-Porter digital recorders which record rainfall and stage, respectively, on sixteen channel paper tapes. A signal from a single Chelsea timer activates the punch cycle for both recorders thereby providing good synchronization between rainfall and runoff records. The timer winding motor and the main drive motors on the two recorders are powered by a 7.5 volt battery.

f_5 - Culvert method of analysis is used to determine stage-discharge relationship.

f_6,r_3 - Rain gages and runoff recording stations installed by the City and County of Denver, Wright-McLaughlin Engineers.

f_7 - Some runoff values have been estimated by manual plotting of a hydrograph and estimating the beginning and ends of it. Estimated values from SWMM were not included.

f_8 - No accurate runoff data before March 1977 because of supercritical flow in storm drain, and therefore not included. In March 1977, a 90-degree V-notch weir was installed in the storm drain that allowed accurate measurements of runoff to be made.

f_9 - Events prior to 1977 with runoff between 40 cfs and 100 cfs (1.1 - 2.8 m^3/sec) were not included because of supercritical flow in the storm sewer. In March 1977, an energy dissipator was installed upstream from the V-notch weir which reduced flow velocities to subcritical level enabling accurate runoff measurements.

Table VII-57 Quality Sampling - Denver

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
1	Big Dry Creek Trib, Littleton	S	4-14	Flow-measuring site	4	5/76-6/77
2	North Avenue, Lakewood	S	4-30	Flow-measuring site	2	4/77
3	Thirty-Sixth-Street Denver	S	10	Flow-measuring site	1	5/77

S - Sampler collects 24 two-litre samples. Sample bottles are refrigerated at about 4°C. Mounted on the refrigeration chest is a 48-position rotating faucet assembly which alternately fills a bottle in approximately 10 sec, or returns water to the sewer through a drain. The rotation of the faucet and the operation of the pump which feeds it are externally controlled.

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(4-76)

Table VII-58 Quality Parameters - Denver

Not all parameters are available for all storms

Parameter	STORET Code	Units
Specific conductance, 25°C	95	µmhos/cm
Biochemical Oxygen Demand, 5-day	310	mg/l
pH	403	
Alkalinity as $CaCO_3$	410	mg/l
Bicarbonate (HCO_3)	440	mg/l
Carbonate (CO_3)	445	mg/l
Total Nonfiltrable Residue	530	mg/l
Volatile Nonfiltrable Residue	535	mg/l
Total Nitrogen (N)	600	mg/l
Total Organic Nitrogen (N)	605	mg/l
Total Ammonia Nitrogen (N)	610	mg/l
Total Nitrite (N)	615	mg/l
Total Nitrate (N)	620	mg/l
Total Kjeldahl Nitrogen (N)	625	mg/l
Total Nitrite plus Nitrate (N)	630	mg/l
Dissolved Phosphorus (P)	666	mg/l
Dissolved Organic Carbon (C)	681	mg/l
Suspended Organic Carbon (C)	689	mg/l
Total Hardness (Ca, Mg)	900	mg/l
Non-Carbonate Hardness	902	mg/l
Dissolved Calcium (Ca)	915	mg/l
Dissolved Magnesium (Mg)	925	mg/l
Dissolved Sodium (Na)	930	mg/l
Sodium Absorption Ratio	931	
Dissolved Potassium (K)	935	mg/l
Dissolved Chloride (Cl)	940	mg/l
Dissolved Sulfate (SO_4)	946	mg/l
Dissolved Fluoride (F)	950	mg/l
Dissolved Silica (SiO_2)	955	mg/l
Total Arsenic (As)	1002	µg/l
Total Copper (Cu)	1042	µg/l
Total Iron (Fe)	1045	µg/l
Total Lead (Pb)	1051	µg/l
Dissolved Manganese (Mn)	1056	µg/l
Total Zinc (Zn)	1092	µg/l
Total Coliforms	31501	MPN/100 ml[a]
Fecal Coliforms	31616	MPN/100 ml[a]
Streptococci	31679	MPN/100 ml[a]
Total Orthophosphorus (P)	70507	mg/l
Dissolved Solids (Residue at 180°C)	70300	mg/l

[a] - On data tape, coliforms reported as 100 x $\log_{10}$ (MPN/100 ml).

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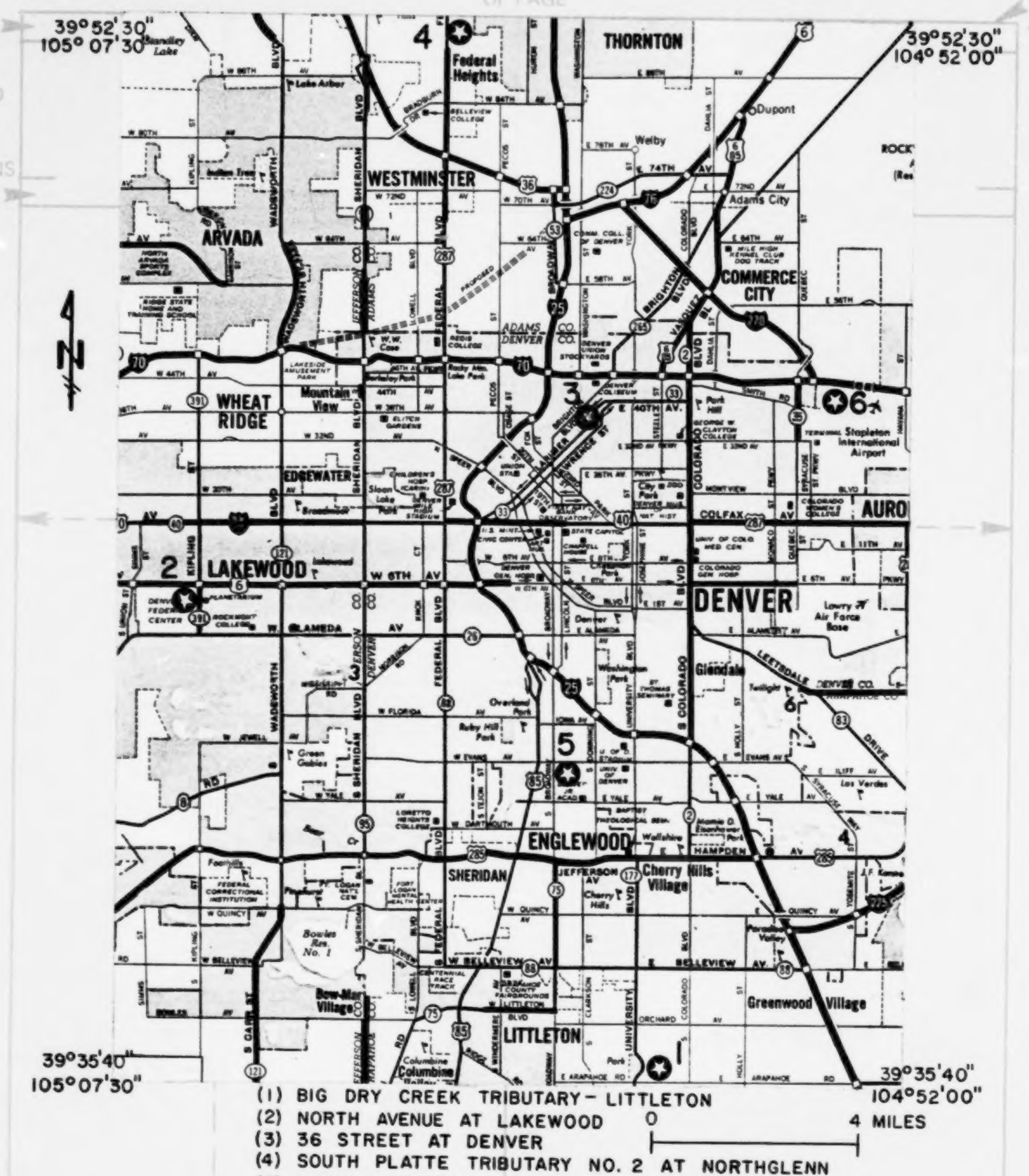

(1) BIG DRY CREEK TRIBUTARY– LITTLETON
(2) NORTH AVENUE AT LAKEWOOD
(3) 36 STREET AT DENVER
(4) SOUTH PLATTE TRIBUTARY NO. 2 AT NORTHGLENN
(5) HARVARD GULCH
(6) CONCOURSE D DRAIN AT STAPLETON AIRPORT

Figure VII-64. Location map for Denver catchments

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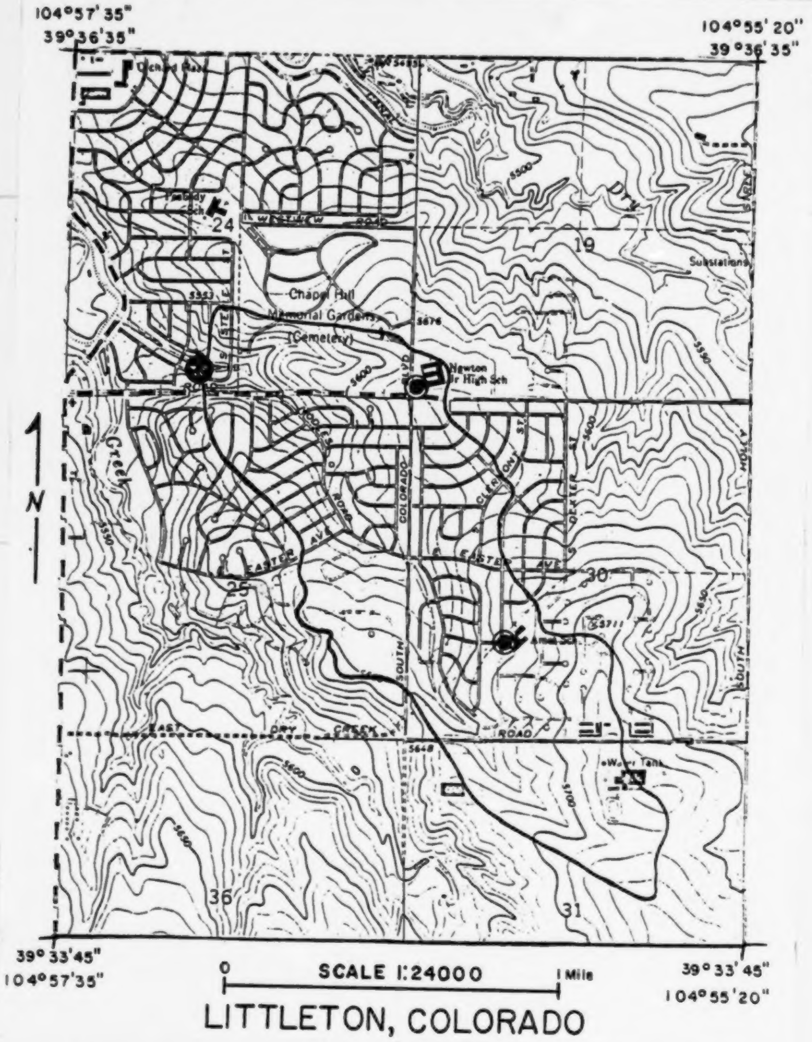

✪ **MONITORING STATION**

◉ **RAIN GAGE**

Figure VII-65. Denver, Colorado, Big Dry Creek Tributary Littleton, (CO0101), U.S. GS St. 06710200, 606 ac (245.25 ha)

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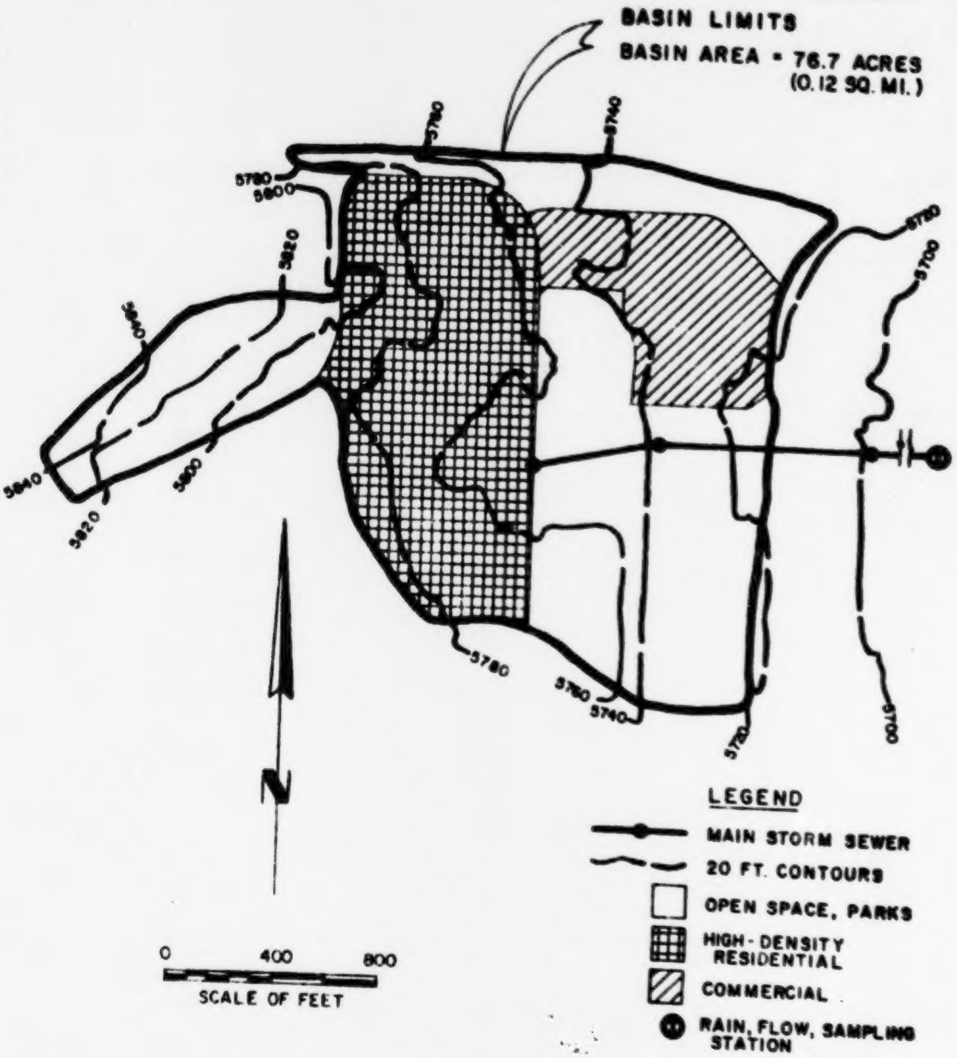

DENVER, COLORADO

Figure VII-66. Denver, Colorado, North Avenue, Denver Federal Center, Lakewood (C00102), 76.7 ac (31.04 ha)

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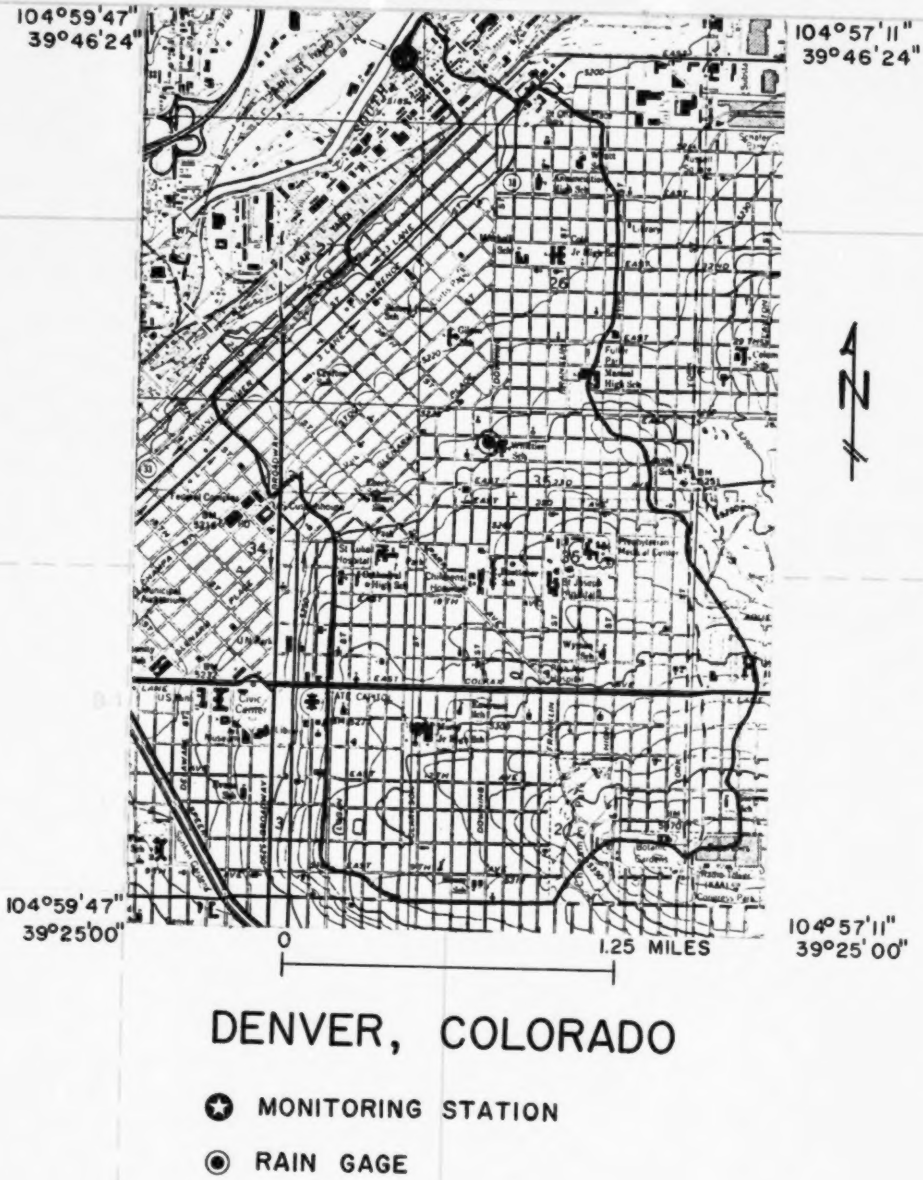

Figure VII-67. Denver, Colorado, Thirty-sixth Street, Denver (CO0103), U.S. GS St. No. 06714100, 2246 ac (908.96 ha)

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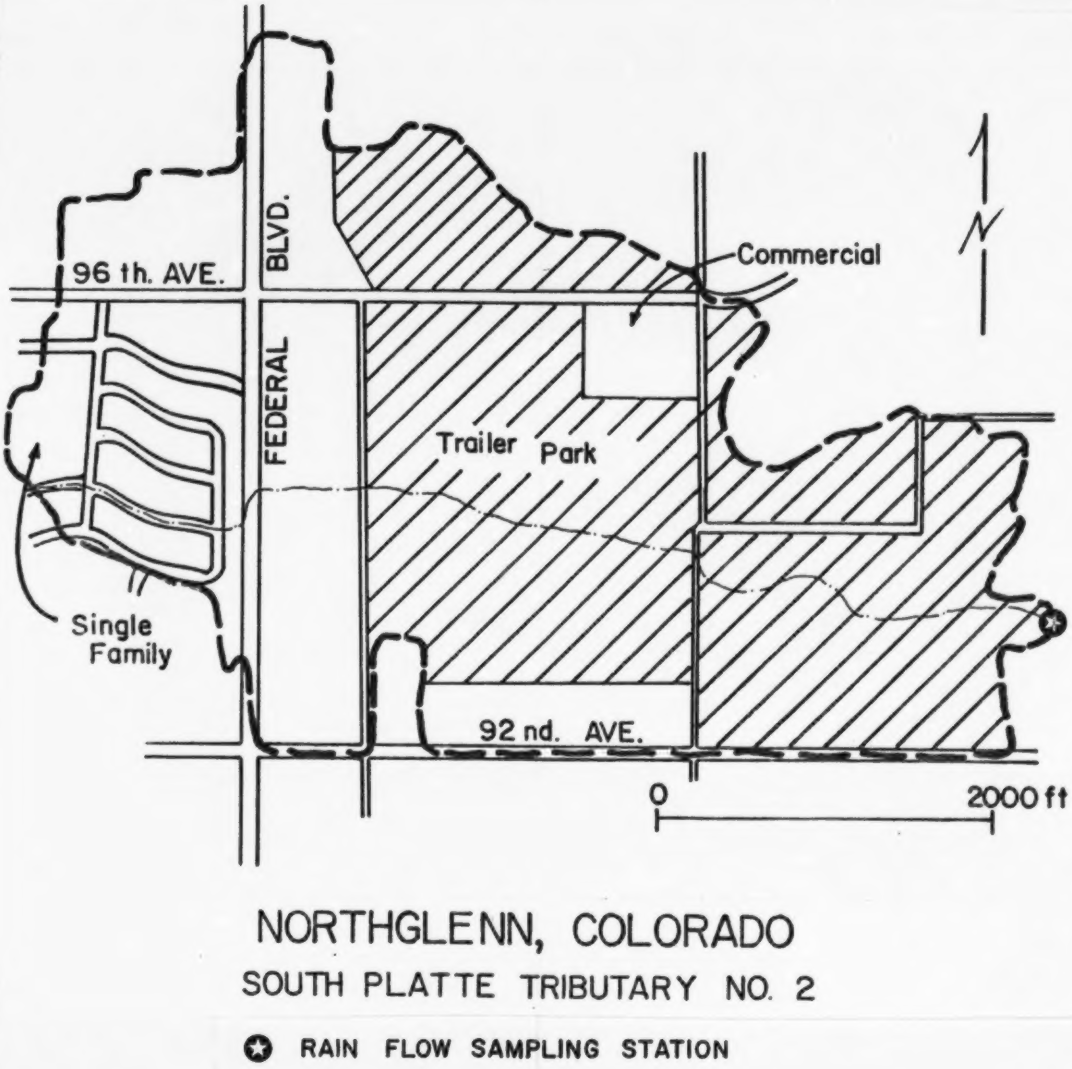
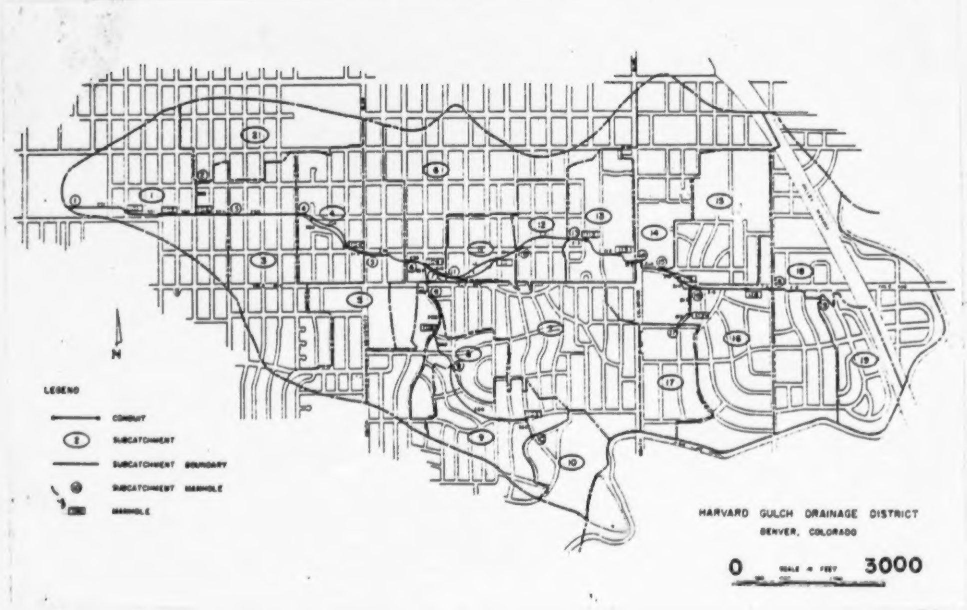


Figure VII-68. Denver, Colorado, South Platte Tributary No. 2, Northglenn (CO0104), 307 ac (124.2 ha)



DENVER, COLORADO

Figure VII-69. Denver, Colorado, Harvard Gulch,(C00105), 2956 ac (1196.3 ha)

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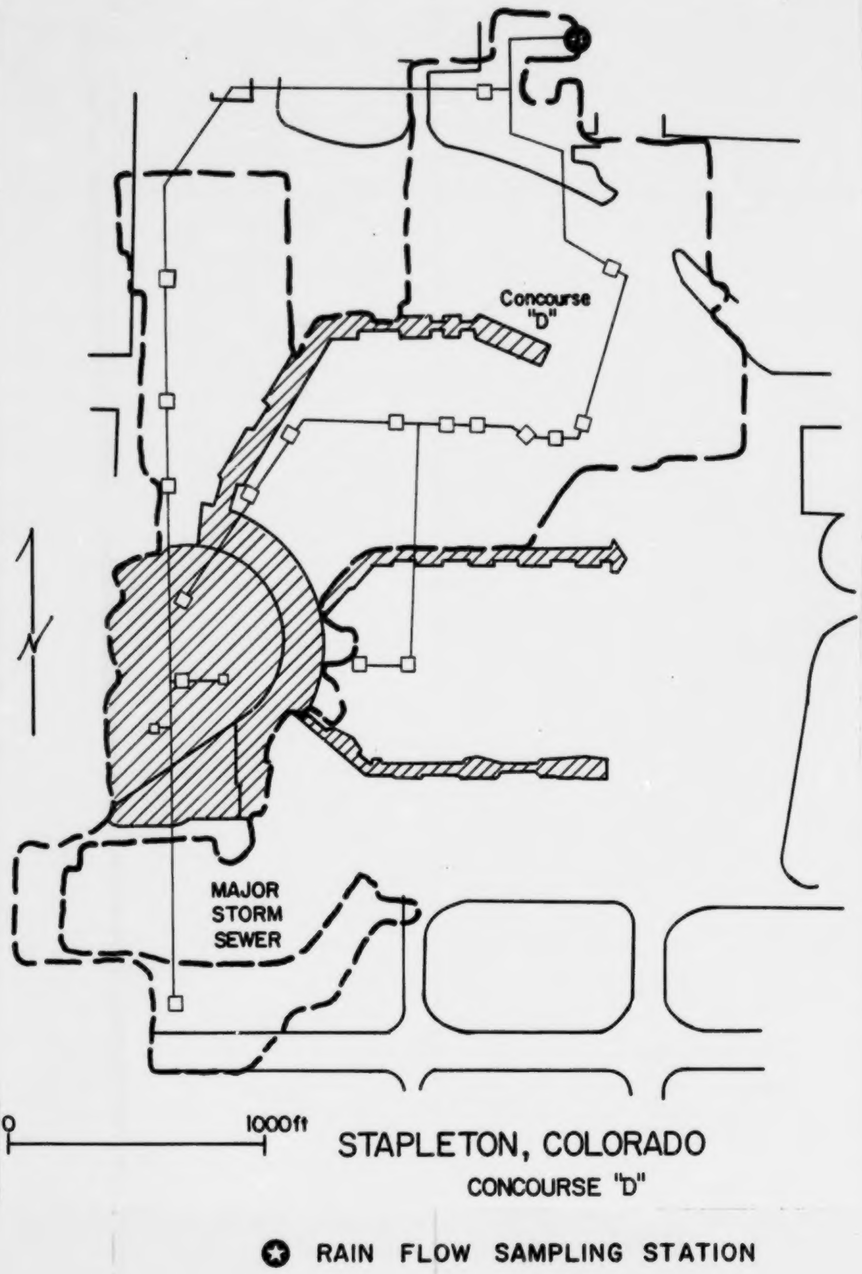

Figure VII-70. Denver, Colorado, Concourse D Drain, Stapleton Airport, (C00106), 73 ac (29.5 ha)

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DADE COUNTY, FLORIDA

In a continuation of the sampling program initiated in Broward County (described in detail elsewhere in this report) the Miami office of the USGS has also monitored a 14.7 ac (6.0 ha) multi-family residential (apartment) complex in south Miami. Details of the sampling are the same as for Broward County. A site description and modeling data are given by Miller (199), and data are contained in Hardee et al. (214). Date were obtained from the USGS on a magnetic tape for entry into the data base.

State and City Code: FL 02

Table VII-59 Catchments - Miami, Dade County

No	Name	Area,ac (ha)	SCS Soil Types	Drainage System	Land Use
1	Multi - Family Residential (Kings Creek Apartments near SW 77 Ave. and Camino Real)	14.7[a] (6.0)	Perrine Marl[b]	Storm[c]	Apartments

[a] - Impervious area: 10.4 ac (4.2ha)
Hydraulically effective impervious area: 6.48 ac (2.6 ha)

[b] - Friable marl of silt-loam texture; contains few shell fragments; underlain by limestone, hydrologic group D; soil cover is lawn.

[c] - Streets have no curb and gutter, but centerline is lowest point at cross section; stormwater is then drained towards, and conveyed along the center of the street. Street material is bituminous concrete.

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Table VII-60 Quantity Data - Miami, Dade County

		Flow		Rain					
				Gages Used					
No	Catchment	Type of Flow Measurements	Sampling Interval min	No. in Catch.	No. near Catch.	Type	Sampling Interval min	No. of Storms	Period
1	Multi-Family Residential	f_1	1	2^a	0	r_1	5	43	5/77-6/78

f_1 - Fiberglass U-shaped, venturi-type constriction mounted in 48 in (1219 mm) pipe. Calibrated in laboratory. Stage measured by nitrogen gas bubbler tube.

r_1 - Weather Measure Model P-501 tipping bucket gage: Bucket capacity = 0.01 in (0.25 mm).

[a] - Not every gage has the same number of storm events.

Time synchronization flow-rain: Excellent since data are telemetered to same multiple pen strip chart recorder.

Table VII-61 Quality Sampling - Miami, Dade County

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
1	Multi-Family Residential	S_1	1-15	Outfall Pipe	43	5/77-6/78

S_1 - USGS continuous flow automatic sampler 2ℓ (0.53 gal.) bottles.

Time synchronization, flow-quality: Good since time of sample noted on same strip chart recorder as used for rain-flow.

Table VII-62 Quality Parameters - Miami, Dade County

Not all parameters are available for all storms.

Parameter	STORET Code	Units
Turbidity	70	JTU
Color	80	PCU
Conductivity at 25°C	95	µmhos
COD High level	340	mg/l
Residue, Total	500	mg/l
Residue dissolved-105°C	515	mg/l
Total N	600	mg/l
Organic N	605	mg/l
NH_3-N, total	610	mg/l
NO_2-N, total	615	mg/l
NO_3-N, total	620	mg/l
Total Kjel. Nitrogen	625	mg/l
NO_2 + NO_3-N, total	630	mg/l
Phos. P	665	mg/l
Tot. Organic C	680	mg/l
Tot. Inorganic C	685	mg/l
Tot. C	690	mg/l
Potassium K, total	937	mg/l
Cadmium Cd, total	1027	µg/l
Chromium Cr, total	1034	µg/l
Copper, Cu, total	1042	µg/l
Iron, total	1045	µg/l
Lead, Pb, total	1051	µg/l
Zinc, Zn, total	1092	µg/l
Tot. Colif.	31501	MPN/100 ml[a]
Fec. Strep.	31679	MPN/100 ml[a]
Fec. Strep.	31673	MPN/100 ml[a]
Res.-Susp. Solids at 180°C	70299	mg/l
Phosp-tot. Ortho.	70507	mg/l
Total N as NO_3	71887	mg/l
Sample Source BM	72005	

[a] - On data tape, coliforms reported as 100 x $\log_{10}$ (MPN/100 ml).

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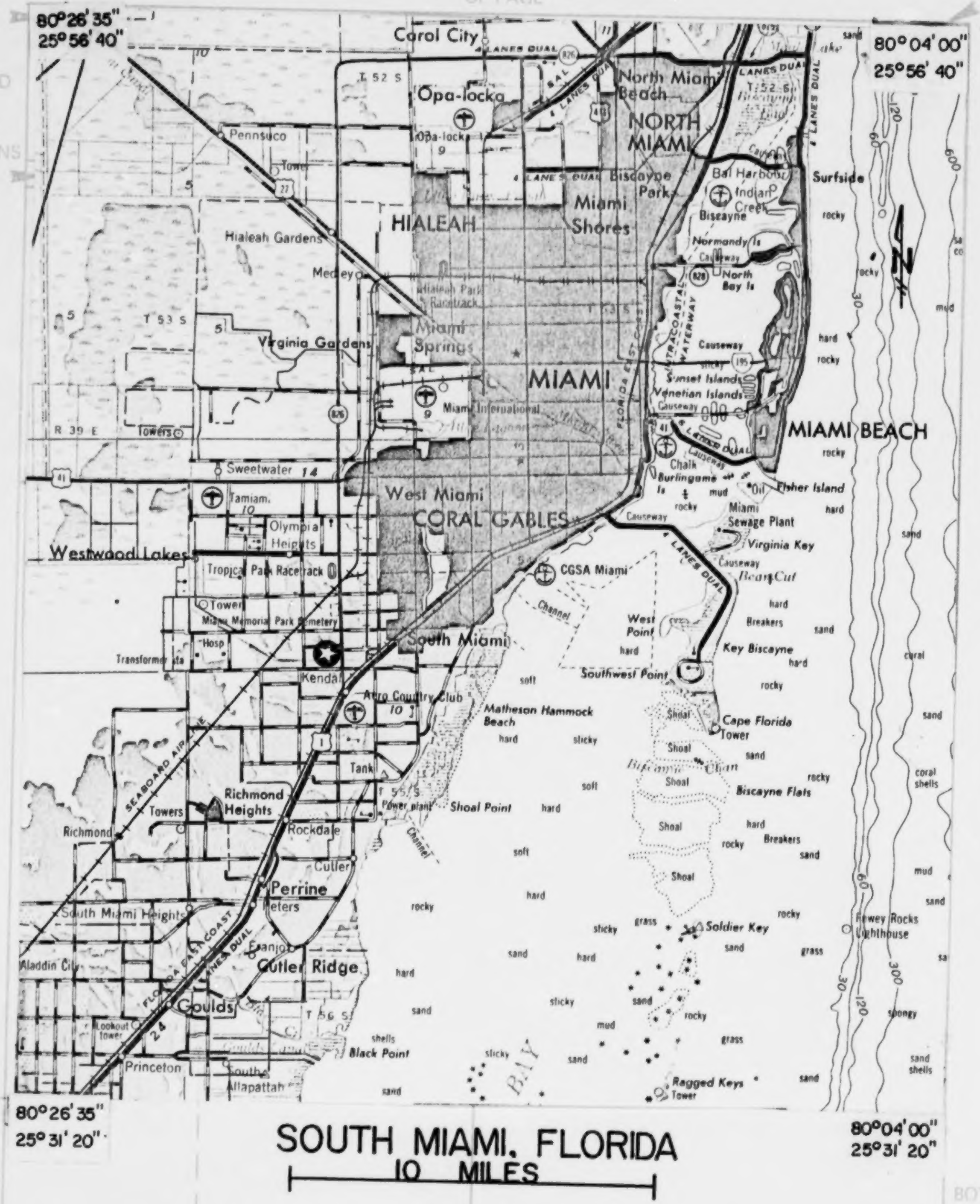

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Figure VII-71. Location map for Miami, Dade County catchment (FL0201), 14.7 ac (6.0 ha).

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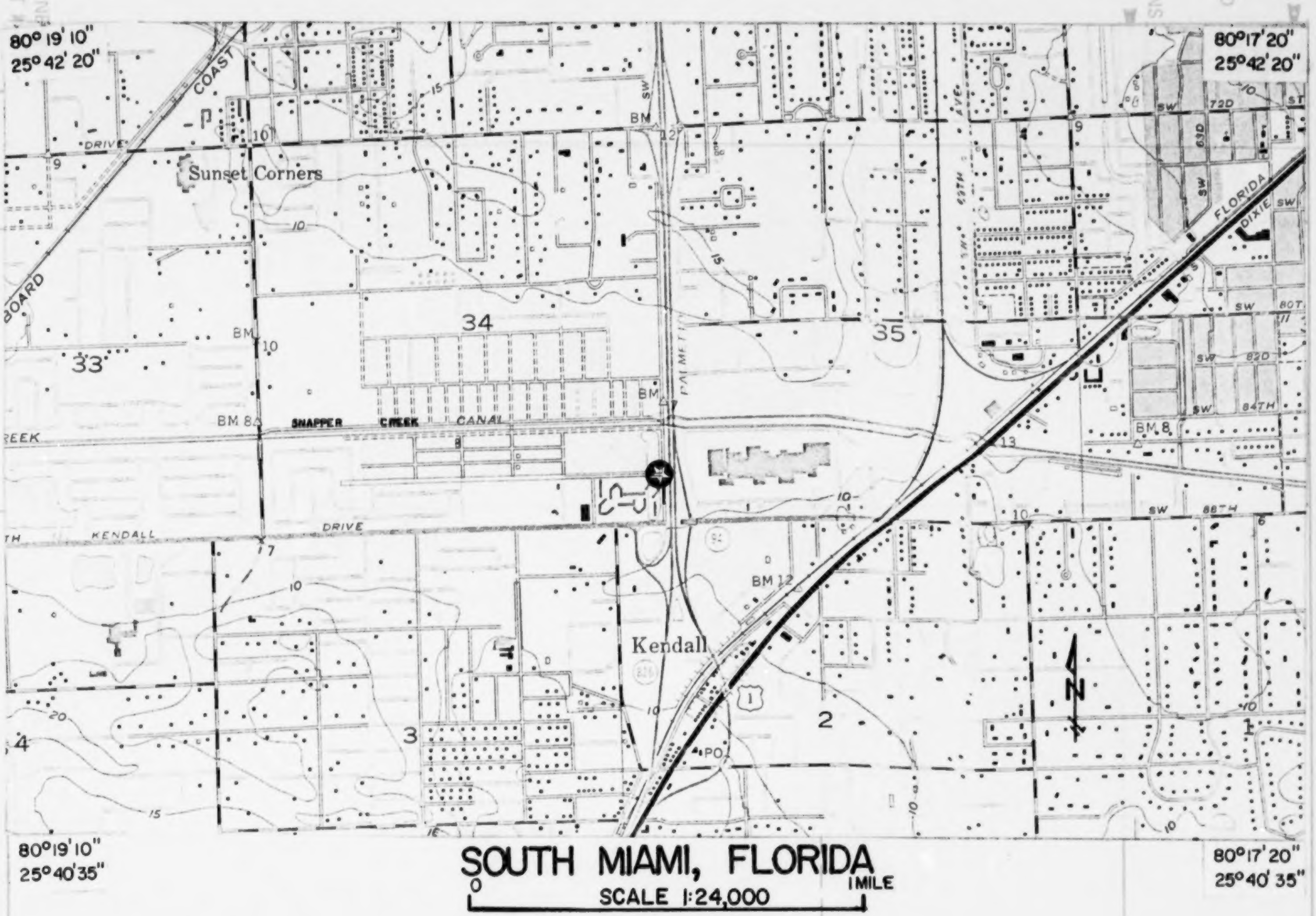

Figure VII-72. Location map for Miami, Dade County, catchment (FL0201), 14.7 ac (6.0 ha)

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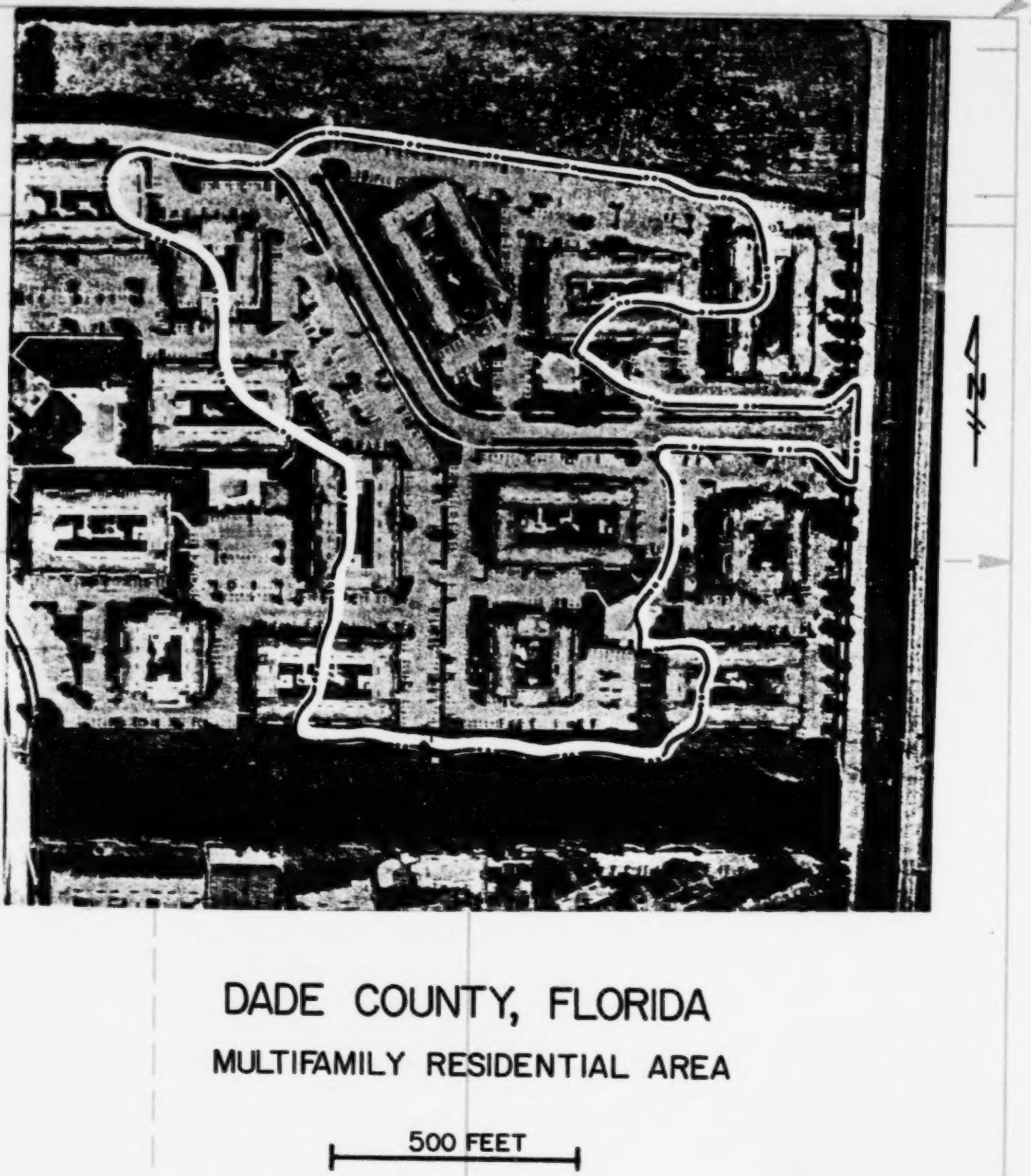

Figure VII-73. Miami, Dade County, Florida, Multi-Family Residential (Kings Creek Apartments) (FL0201), 14.7 ac (6.0 ha).

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TORONTO, ONTARIO

Under the Research Program for the Abatement of Municipal Pollution within the Provisions of the Canada-Ontario Agreement on Great Lakes Water Quality, and project number 74-8-5, a storm water management, model verification study was undertaken by M. M. Dillon Ltd. in Toronto, Ontario (62,94,211,212). The 383 ac (155 ha) catchment is an urban one, with combined sewers located in the Borough of East York.

Under the same Program, J.F. MacLaren Ltd., undertook a similar project (project No. 77-8-43), in the Brucewood subdivision in North York, Toronto (62,91,92,93,213). This time the 48.23 ac (19.52 ha) catchment represented a typical modern subdivision with storm drainage system (213). Snow depth and density were measured at many locations and aerial photographs were used for assessment of major snow coverages. Both studies used their data for comparisons with SWMM runs. Data were taken from references (92,93) and keypunched by the University of Florida. The first gives data from March 1976 to September 1976. The second from May 1974 to March 1975.

Province and City Code: ON 03

Table VII-63 Catchments - Toronto

No	Name	Area,ac (ha)	Population	Imperviousness,%	Drainage System	Average Land Slope	Land Use
1	Urban Catchment East General Hosp. East York	383.0 (155.0)	14,600	49.0^{b_1}	Combined		Residential, mostly single family units, 89.1%; institutional 5.7%;parks and open spaces, 4.2%; commercial 1.0%.
2	Brucewood, North York	48.23 (19.52)	848^{a}	48.3^{b_2}	Storm	3%	Single family Residential

a - Estimated using 212 single family houses, 169 detached, 43 semi-detached, 4 people per house.

b_1 - Roads, sidewalks and driveways 52%; roofs of houses connected to sewers 38%; roofs of sheds not connected to sewers 4%; miscellaneous 6%.

b_2 - Streets 7.00 ac (2.83 ha); driveways 4.61 ac (1.87 ha); roofs 11.69 ac (4.73 ha).

Table VII-64. Quantity Data - Toronto

		Flow		Rain					
				Gages Used					
No	Catchment	Type of Flow Measurements	Sampling Interval min	No. in Catch.	No. near Catch.	Type	Sampling Interval min	No. of Storms	Period
1	East General Hosp. East York	f_1	6-7	1	0	r_1	1-2	22	3/76-9/76
2	Brucewood, North York	f_2	1-5	1	0	r_2	1-5	28	5/74-3/75

f_1 - Partial Trapezoidal weir, mounted in a 66 in. (1676 mm) diameter outlet pipe, 100 ft (30.48 m) downstream from the areas manhole. Head of water immediately upstream of the weir was measured with 'bubbler type' system. A weir rating curve was produced at the Hydraulic Laboratory of Canada for Inland Waters.

r_1 - Meteorological Service of Canada (MSC) tipping bucket rain gauge; bucket capacity = 0.1" (0.25 mm).

f_2 - Horizontal sharp crested weir located across the face of the sewer outfall structure; water level measured by a Manning "Dipper" Transmitter (T1120-02-F-07) which was powered by a 12V P.C. battery and was sensing the water level by a probe; a 10" (25.4 cm) diameter plexiglass tube connected to the wet well behind the weir by a 2" (5.08 cm) hose was used as stilling well; information was transmitted to a remote recorder located 3 miles from the site over leased telephone lines. Water levels recorded on a BIF 233-01 chart graph recorder, A.C. powered. The "Dipper" was proved to be reliable during the study. However there was problems with the initial calibration between transmitter and recorder and problems with accidental disconnection by the telephone company of the telephone transmission line once and when it was found broken another time. From October 16 the weir was converted to a compound V-notch sharp crested type for higher sensitivity in measuring snowmelt.

r_2 - Atmospheric Environment Service of Canada tipping bucket rain gauge; bucket capacity 0.01" (0.25 mm). Each tip was transmitted over leased telephone lines to the same remote recording location as the water levels. Rainfall recorded on a Rustrack Event Recorder 292-4, A.C powered.

Table VII-64. Quantity Data - Toronto (Cont'd)

Time synchronization - Brucewood: Good, since recordings were simultaneous. The first impulse from the rain gauge initiated both the rainfall and water level charts which were synchronized to travel at a rate of 6"/hr (15.24 cm/hr) enabling a chart resolution of 1 minute. Charts were set to run for two hours after the last impulse from the rain gauge were received, after which they stopped automatically.

Table VII-65. Quality Sampling - Toronto

No	Catchment	Sampling Method	Sampling Interval min	Sampling Location	No. of Storms	Period
1	East General Hospital, East York	S_1	6-7	Outfall Pipe	22	3/76-9/76
2	Brucewood, North York	S_2	5-15	Ourfall Pipe	8	5/74-3/75

S_1 - Automatic non-refrigerated "Sirco Series B/ST-VS" sampler with 24 jars of 1000 ml capacity, housed on the surface; explosion proof pump (FA22 C9Q Monyo pump with a class 1, group D, 1750 rpm, 1/2 hp 110-voltmotor) in the manhole pumped sewage for the sampler. Sampling commenced whenever the flow of water over the weir reached 15 cfs and was continued till the flow had dropped to 8.6 cfs or until 24 samples had been collected.

S_2 - Automatic Sirco Sampler (MKS VII) located at the sewer outfall with 24 jars of 500 ml samples capacity. Erratic operation of the sampler necessitated hand-sampling during most of the study.

EPA-287 (Cin.)
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Table VII-66. Quality Parameters - Toronto

Not all parameters are available for all storms at all catchments.

Parameter	STORET Code	Units
Conductivity at 25°C	95	µmhos/cm
BOD_5	310	mg/l
COD	340	mg/l
Residue, total (total solids) (TS)	500	mg/l
Residue, total volatile (TVS)	505	mg/l
Residue, total fixed	510	mg/l
Residue, total filtrable, 150°C, (TDS)	515	mg/l
Residue, volatile filtrable (VDS)	520	mg/l
Residue, fixed filtrable	525	mg/l
Residue, total nonfiltrable, (TSS)	530	mg/l
Residue, volatile nonfiltrable (VSS)	535	mg/l
Residue, fixed nonfiltrable	540	mg/l
Nitrogen, ammonia, dissolved (NH_3-N,tot)	608	mg/l
Nitrogen, ammonia, total (NH_3-N,tot.)	610	mg/l
Nitrite nitrogen, total (NO_2-N,tot.)	615	mg/l
Nitrate nitrogen, total (NO_3-N,tot.)	620	mg/l
Nitrogen, Kjeldahl, total (Tot. Kjel.N)	625	mg/l
Phosphorus, total, wet method (tot. P)	665	mg/l
Phosphorus, dissolved, wet method (Dis. P)	666	mg/l
Phosphorus, dissolved hydrolyzable (P)	672	mg/l
Chloride (Cl)	940	mg/l
Sulfate (SO_4)	945	mg/l
Lead, total (Pb, tot.)	1051	µg/l
Coliform, tot., membrane filter, immed. M-ENDO med., 35°C	31501	MPN/100 ml[a]
Fecal coliform, membr. filter, M-FC broth, 44.5°C	31616	MPN/100 ml[a]
Phenols	32730	µg/l

[a] - On data tape, coliforms reported as 100 x $\log_{10}$ (MPN/100 ml).

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Table VII-67. Municipal Practices - Toronto

No	Name	Street Cleaning	Sewer Cleaning	Snow and Ice Control
1	Urban Catchment East York	~ once a week (April-November)	At least once per year	Salt and sand spreading; Road & sidewalk ploughing; snow removal. See (212).
2	Brucewood North York	1-2 times/week (April-May) + October some flushed also once or twice/week (May-October).		Salt (0.5-.75 tons/mile)[a] or sand & salt (20:1)

[a] - Snow depth and densities measured at various locations; Major snow coverages were assessed from aerial photographs.

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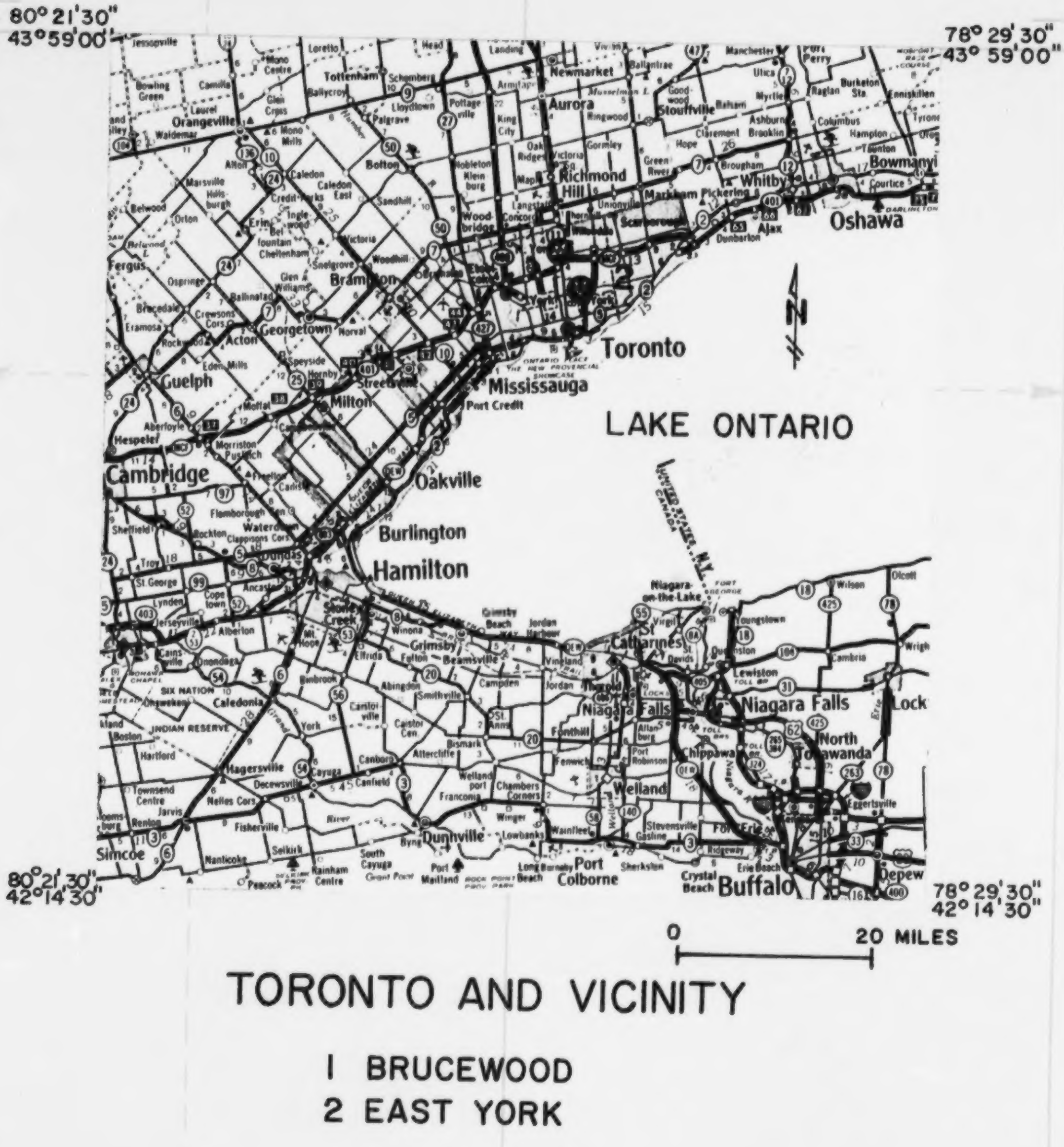

Figure VII-74 . Location map for Toronto Catchments

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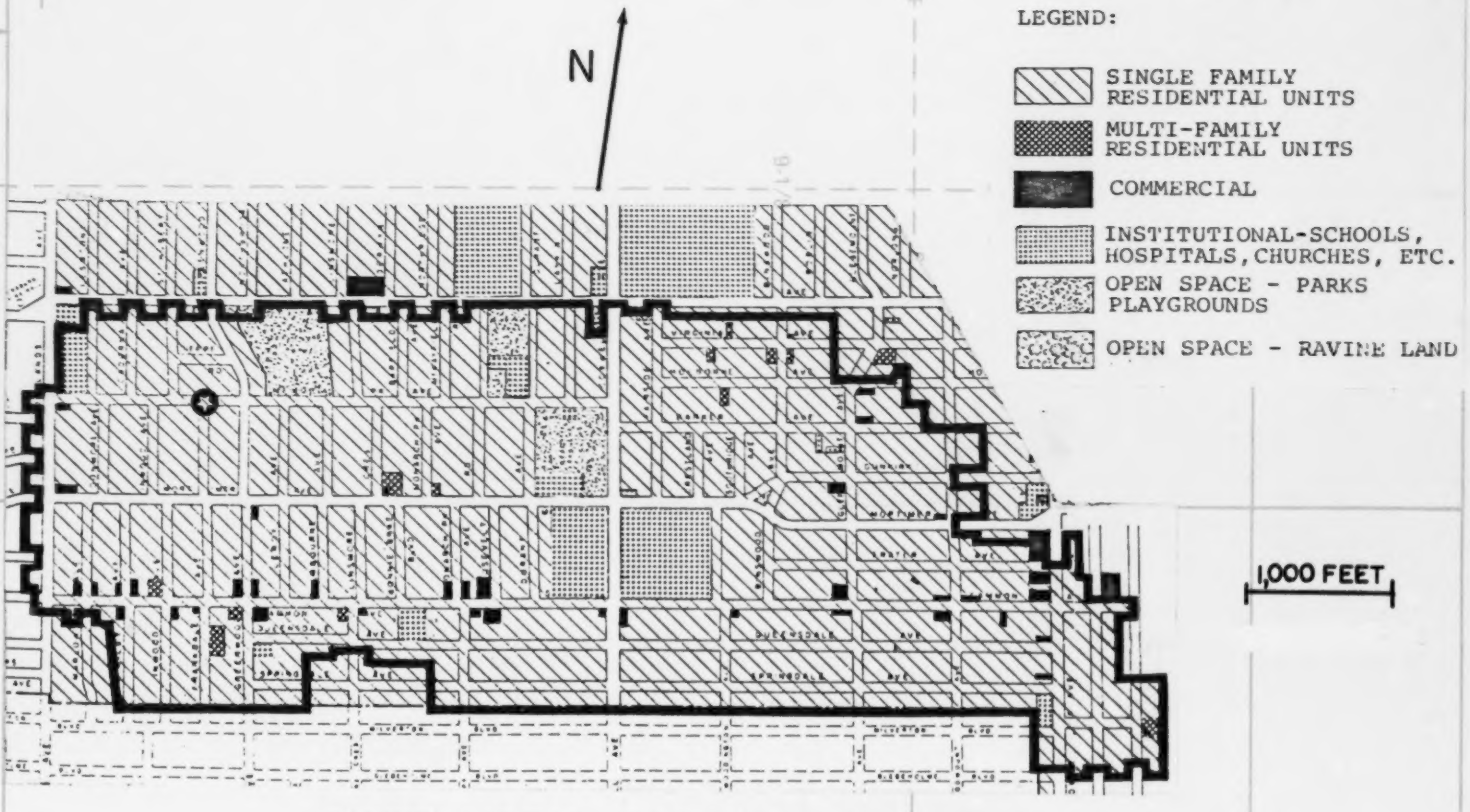
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▤ INSTITUTIONAL-SCHOOLS, HOSPITALS, CHURCHES, ETC.
▧ OPEN SPACE - PARKS PLAYGROUNDS
▧ OPEN SPACE - RAVINE LAND
1,000 FEET

EAST YORK, TORONTO, ONTARIO

EAST YORK URBAN CATCHMENT

EXISTING LAND USE

Figure VII-75. Toronto, Ontario, Urban Catchment East General Hospital, East York (ON0301), 383.0 ac (155.0 ha)

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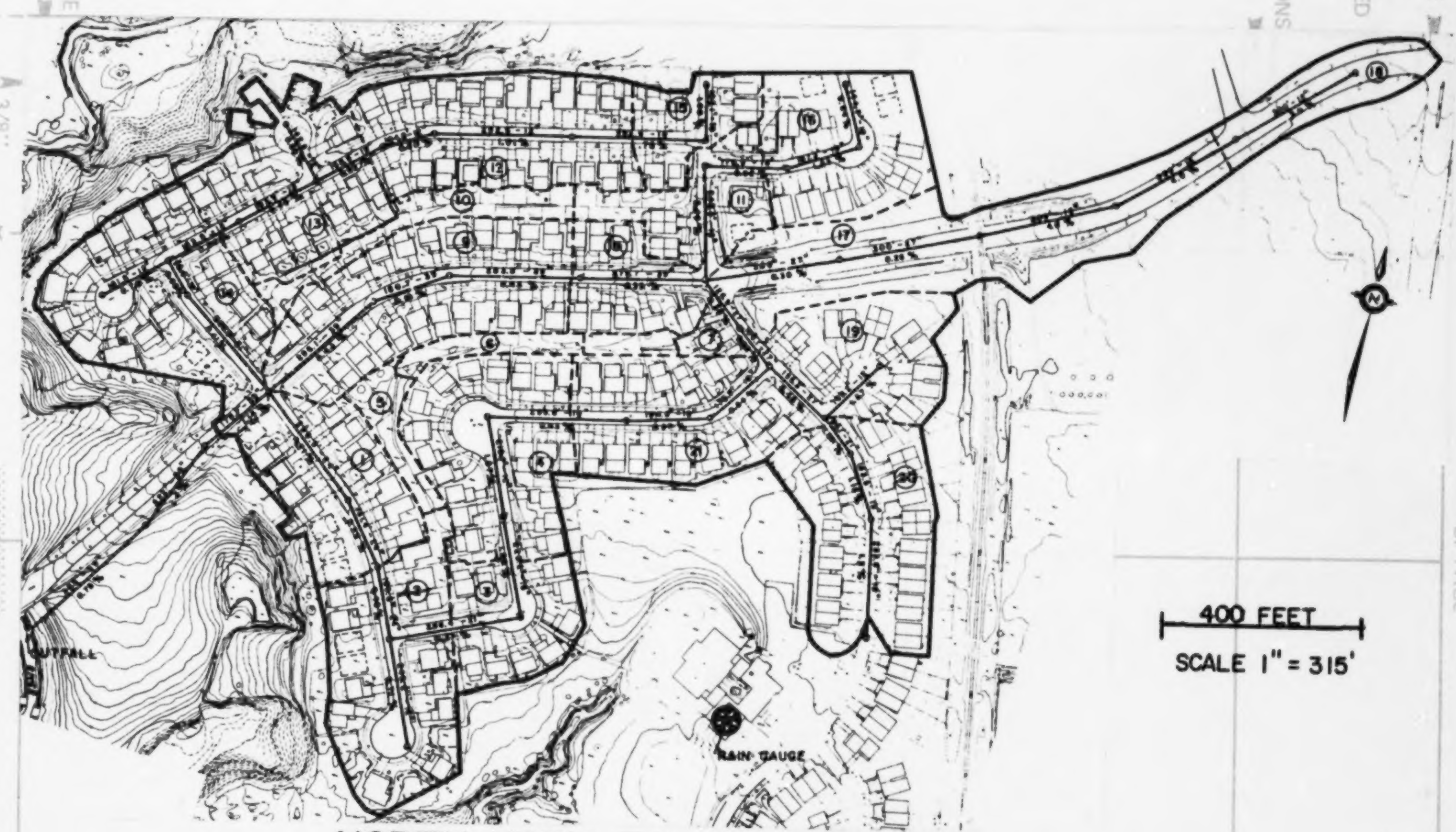


NORTH YORK, TORONTO, ONTARIO

BRUCEWOOD SUBDIVISION URBAN TEST CATCHMENT

STORM SEWER SYSTEM AND DRAINAGE SUBCATCHMENTS

Figure VII-76. Toronto, Ontario, Brucewood, North York (ON0302), 48.23 ac (19.52 ha)

SECTION VIII

DESCRIPTION OF RAINFALL-RUNOFF DATA BASE SOURCES

INTRODUCTION

The following subsections describe locations for which rainfall and runoff data have been obtained and placed in the data base. No quality data (or only unsuitable data) are available, although current studies at some sites are likely to provide such data in the future.

Again, sources included in this section were chosen primarily on the basis of quality of the data, availability and documentation. Remarks made at the introduction to Section VII apply here also. In particular, documentation varies greatly from site to site. In a few instances, the only readily available information available to UF was that contained in the RRL and ILLUDAS studies (49,50). However, in most cases, at least some other source documentation was available. The cited references should be consulted for additional information at each location.

For quantity-only locations, a table of parameter codes is not given unless there are multiple rain gages, in which case data from each gage is given a different code number (see Table VI-3). In the absence of a table, rainfall and flow values are assigned the code numbers 90050 and 00061, respectively, as indicated in Table VI-3.

Information on modeling data should again be requested directly from UF, as indicated in Section VII.

BALTIMORE, MARYLAND

Some of the earliest and most widely used urban rainfall-runoff data were gathered in Baltimore as part of the Storm Drain Research Project at The John Hopkins Unviersity. Tucker (36,40) has published data for the Northwood and Gray Haven catchments, including necessary modeling information, and the data included herein were taken from these reports. Data from other catchments, including Swansea, Montebello No. 4 and South Parking Lot No. 1, are also available (40, 50).

The Baltimore data, especially Northwood, have been extensively used for model verification, e.g., references 50, 81, 101, 112-127, 143, 174, 176-178. Such references serve as valuable supplementary material for interpretation of data.

State and City Code: MD 01

Table VIII-1. Catchments - Baltimore

No.	Name	Area ac (ha)	Sewerage	Imperviousness, %	Average Slope,%	Land Use Percentages
1	Gray Haven	23.3 (9.4)	Storm	52	0.5	Residential
2	Northwood	47.4 (19.2)	Storm	68	3	Res. 63, Com. 37

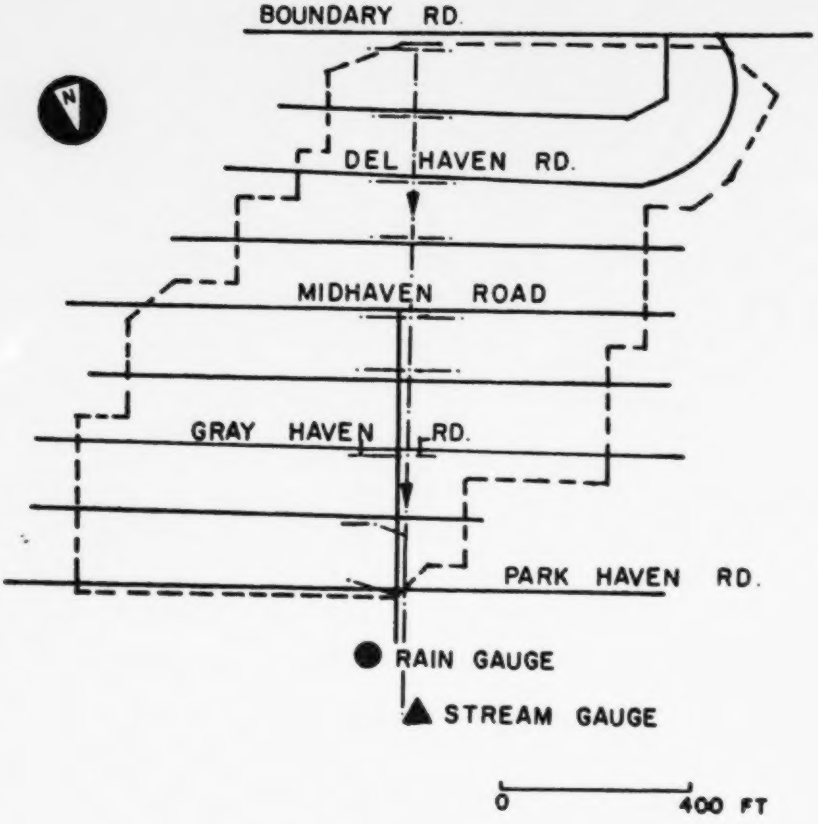
Table VII-2. Quantity Data - Baltimore

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Gray Haven	f_1	1	1	-	r_1	1	28	6/63-10/66
2	Northwood	f_1	1	1	-	r_1	1	14	3/64-9/65

f_1 - Parshall flume located in open channel. Flow measurements estimated to be within ± 5%.

r_1 - Tipping bucket gage, 0.01 in. (0.25 mm) capacity.

Time synchronization: Excellent since data recorded on same chart.



BALTIMORE , MARYLAND

GRAY HAVEN CATCHMENT

(MD 1 1)

Figure VIII-1 Baltimore, Maryland, Gray Haven Catchment, 23.3 ac (9.4 ha).

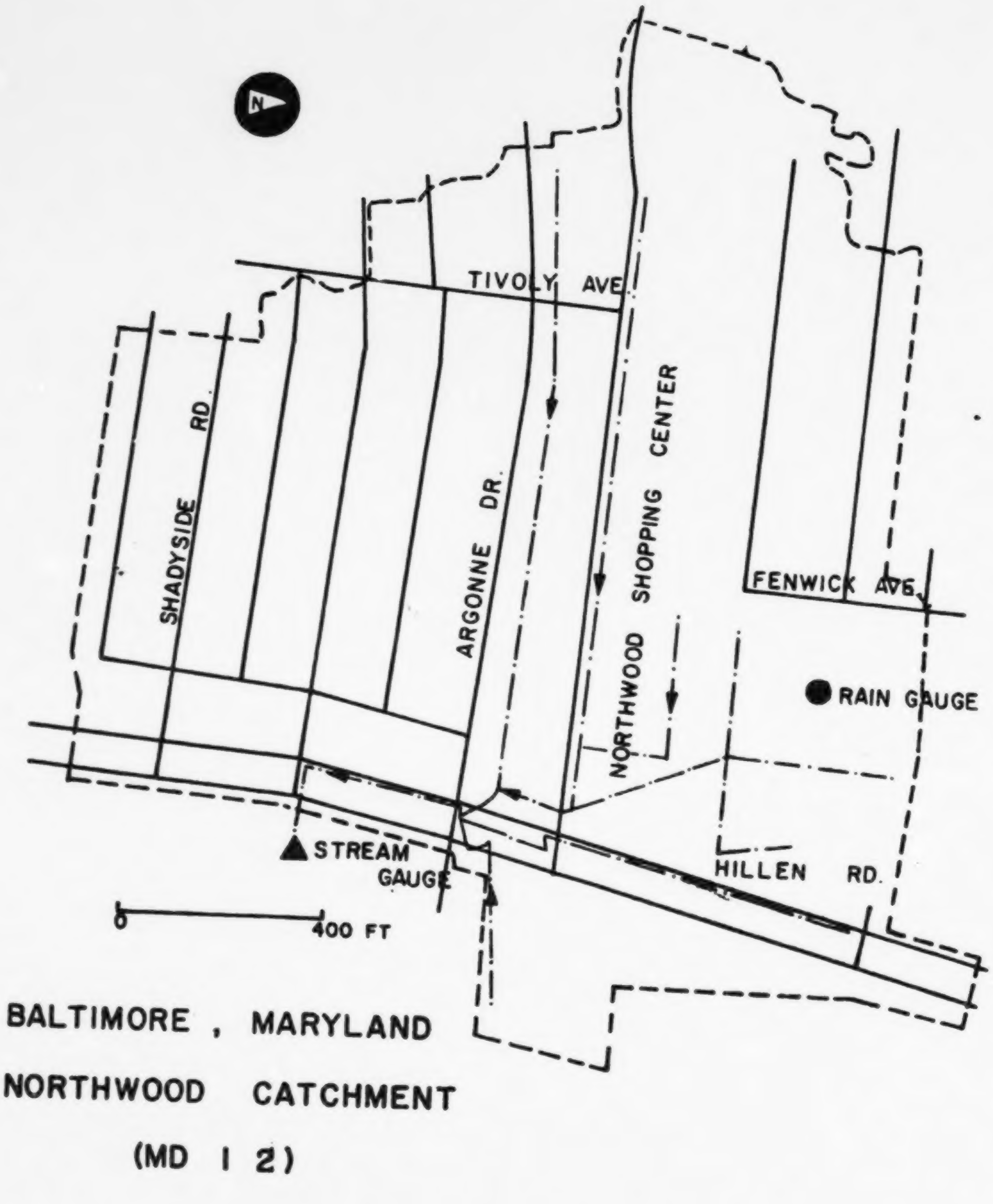


Figure VIII-2 Baltimore, Maryland, Northwood Catchment, 47.4 ac (19.2 ha).

CHICAGO, ILLINOIS

During the period 1959-1963, the Chicago Department of Public Works, Bureau of Engineering, collected rainfall-runoff data for the 12.9 ac (5.2 ha) Oakdale catchment, located about 6 miles (9.6 km) northwest of downtown Chicago. These data were published by Tucker (37, 40) and have been widely used for model testing, e.g., references 1, 81, 101, 112-115, 119, 125-129, 143, 174. Complete modeling data are presented by Tucker (37) to which the studies of Chow and Yen (128) and Brandstetter (1) are valuable supplements.

State and City Code: IL 01

Table VIII-3. Catchments - Chicago

No.	Name	Area ac (ha)	Sewerage	Impervious Area		Pervious Area ac(ha)	No. inlet catchbasins	Land Use
				Directly Connected ac(ha)	Indirectly Connected ac(ha)			
1	Oakdale	12.9 (5.2)	Combined	5.15 (2.09)	0.72 (0.29)	7.05 (2.85)	30	Dense residential

Table VIII-4. Quantity Data - Chicago

No.	Catchment	Flow		Rain				No. of Storms	Period
		Type of flow meas.	Sampling Interval, min	Gages Used		Type	Sampling Interval, min		
				No. in Catchment	No. near Catchment				
1	Oakdale	f_1	1	-	1	r_1	1	16	5/59-9/64

f_1 - Simplex 30 in. (76cm) Type "S" parabolic flume located in vault at outlet of 30 in. (76cm) combined sewer.

r_1 - Tipping bucket gage with 0.01 in. (0.25 mm) capacity located one block north of drainage area.

Time synchronization: Good. Flow and rain data were telemetered to downtown office of Dept. of Public Works. However, time of day of start of storm is not noted, so all data are relative to start of storm.

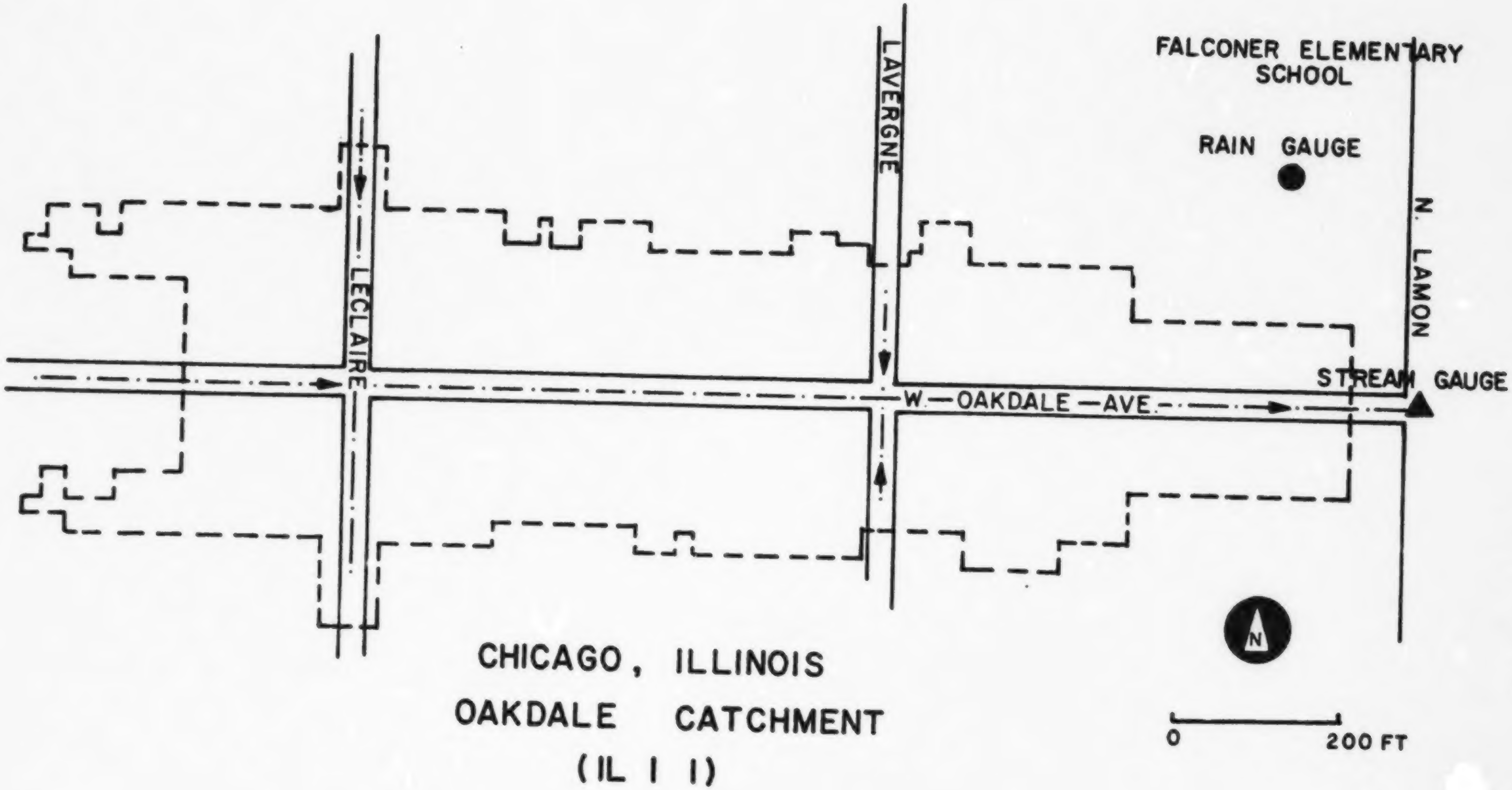


Figure VIII-3 Chicago, Illinois, Oakdale Catchment, 12.9 ac (5.2 ha).

CHAMPAIGN-URBANA, ILLINOIS

Runoff data for the Boneyard Creek catchment have been collected by the USGS since 1948. Rainfall data have been collected since 1949 by the Illinois State Water Survey in cooperation with the Department of Civil Engineering of the University of Illinois. Tucker (42) presents rainfall-stage data for 29 storms from October 1960 to August 1966. After having converted stages to flows via a rating curve and having keypunched the data, they were made available to UF through the courtesy of the Illinois State Water Survey.

The basin contains five recording gages. For 15 of the 28 storms included in the data base, a Thiessen weighted average of the five gages is given. For the remaining 13 storms, individual data for from three to five gages are given. Boneyard Creek data have been used by Stall and Terstriep for RRL and ILLUDAS model verification studies (50, 113) and by others (114, 115, 131, 142).

State and City Code: IL 02

Table VIII-5. Catchment - Champaign-Urbana

No.	Name	Area ac (ha)	Sewerage	Average Slope %	Imperviousness %	Impervious Area Land Use Percentage
1	Boneyard Creek	2290 (927)	Storm[a]	0.2	44.1	Streets 10.9, Alleys 0.9, Sidewalks 3.5, Commercial 7.0, Residential Rooftops 14.8, Campus 7.0.

[a] partially open channels.

Table VIII-6. Quantity Data - Champaign-Urbana

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Boneyard Creek	f_1	5-15	5	-	r_1	6	28	10/60-8/66

f_1 - Stage gage at concrete control. Rating curve given by Tucker (42). USGS gage ID is 3-3370.

r_1 - Weighing bucket gages with weekly charts.

Time Synchronization: Among rain gages ± 10%. Stage gage estimated to be with ± 5 min. of actual time.

Table VIII-7. Additional Rain Gage Information - Champaign-Urbana

Gage No.	Parameter Code	Thiessen Weights		
		5 Gages	Gages 1,2,5[b]	Gages 1,2,5,11[c]
1	90049	0.15	0.40	0.20
2	90048	0.20	0.30	0.20
5	90047	0.30	0.30	0.30
7	90046	0.25		
11	90045	0.10		0.30
Average	90050[a]			

[a] Used when Thiessen average rainfall of 5 gages is given (15 storms). These data were averaged because of similar rainfall patterns.

[b] Storm of 7/13/62 has rainfall for only gages 1,2,5.

[c] Storm of 6/14/64 has rainfall for only gages 1,2,5,11.

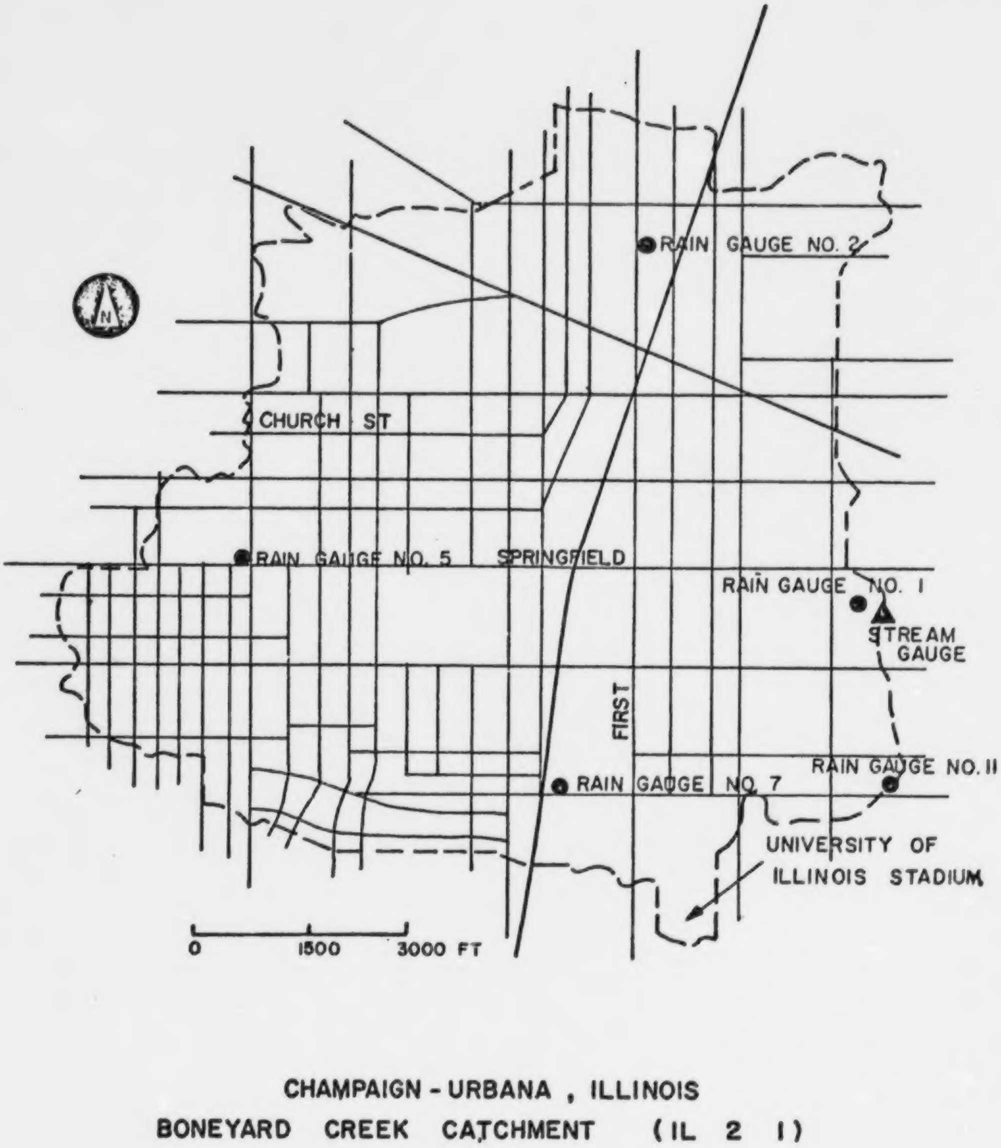


Figure VIII-4 Champaign-Urbana, Illinois, Boneyard Creek Catchment, 2290 ac, (927 ha).

BUCYRUS, OHIO

During 1969, Burges and Niple, Ltd. conducted combined sewer overflow studies in Bucyrus (132). Their report contains considerable information about the three sewer districts sampled, including limited quality data. Data for Sewer District No. 8 were keypunched and supplied to UF through the courtesy of the Illinois State Water Survey.

The data were used in testing the RRL and ILLUDAS models (49, 50). Terstriep and Stall (50) suggest sampling errors at high flows, i.e., high values of measured flows may be lower than their true values. In addition, the flat terrain and indeterminate drainage pattern create ponding during some storms.

State and City Code: OH 01

Table VIII-8. Catchment - Bucyrus

No.	Name	Area ac (ha)	Sewerage	Population	Average Slope, %	Imperviousness, %	Land Use Percentages
1	Sewer Dist. No.8	179 (72.5)	Combined	2020	0.85	33.7	Res. 59.6, Com. 6.3, Ind. 7.8, institutional 4.6, undev. 12.9, railroad 0.2, streets 8.6

Table VIII-9. Quantity Data - Bucyrus

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Sewer District No. 8	f_1	5-15	1	-	r_1	10	10	3/69-9/69

f_1 - Stage measurements by Stevens Type-F recorder located behind 8 ft. (2.4m) rectangular weir. Readings could be made to nearest 0.01 ft. (3mm).

r_1 - Bendix weighing-bucket gage with 24 hour chart.

Time synchronization: Rain and stage gage times estimated to be within ± 2 min.

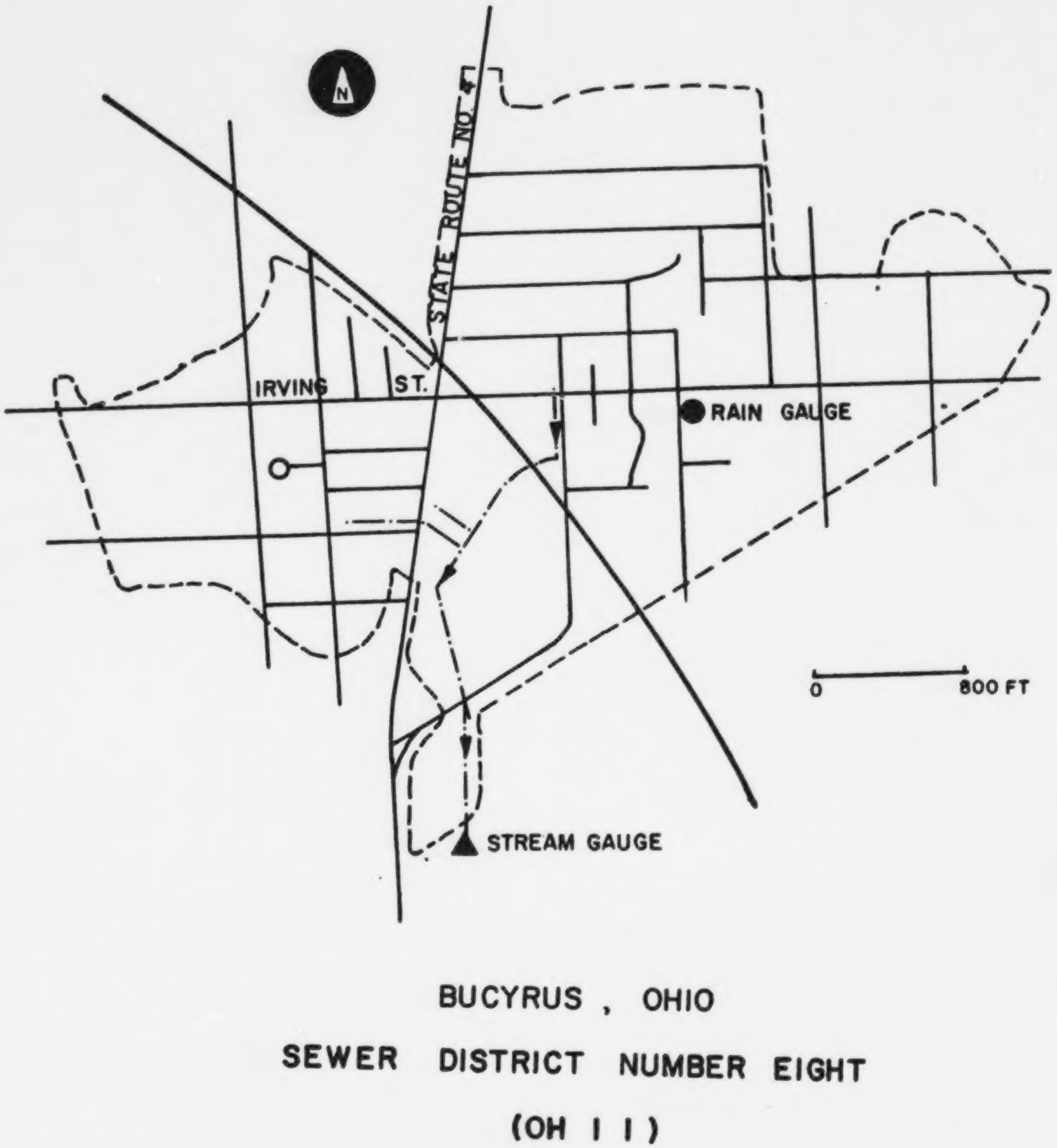


Figure VIII-5 Bucyrus, Ohio, Sewer District Number Eight, 179 ac (72.5ha).

FALLS CHURCH, VIRGINIA

The USGS began recording rainfall-runoff data in the residential Tripps Run Basin near Washington, D.C. in 1959. Tucker (42) reports on its characteristics and sampling program. The Illinois State Water Survey reduced original stage and rainfall records for a 326 ac (130 ha) tributary. The keypunched data were received by UF through their courtesy. A disadvantage in the data is the 0.1 in. (2.5 mm) capacity of the tipping bucket rain gage utilized. In testing the RRL and ILLUDAS models, Stall and Terstriep (49, 50) report some difficulty in obtaining good modeling information. The data have also been used in studies of the effect of urbanization on hydrographs (176, 177).

State and City Code: VA 01

Table VIII-10. Catchment - Falls Church

No.	Name	Area ac (ha)	Sewerage	Total Paved Area, %	Channel Length, mi (km)	Channel Slope	Land Use
1	Tripps Run Tributary	322 (130)	Storm	31	1.1 (1.76)	0.0193	Residential with some commercial

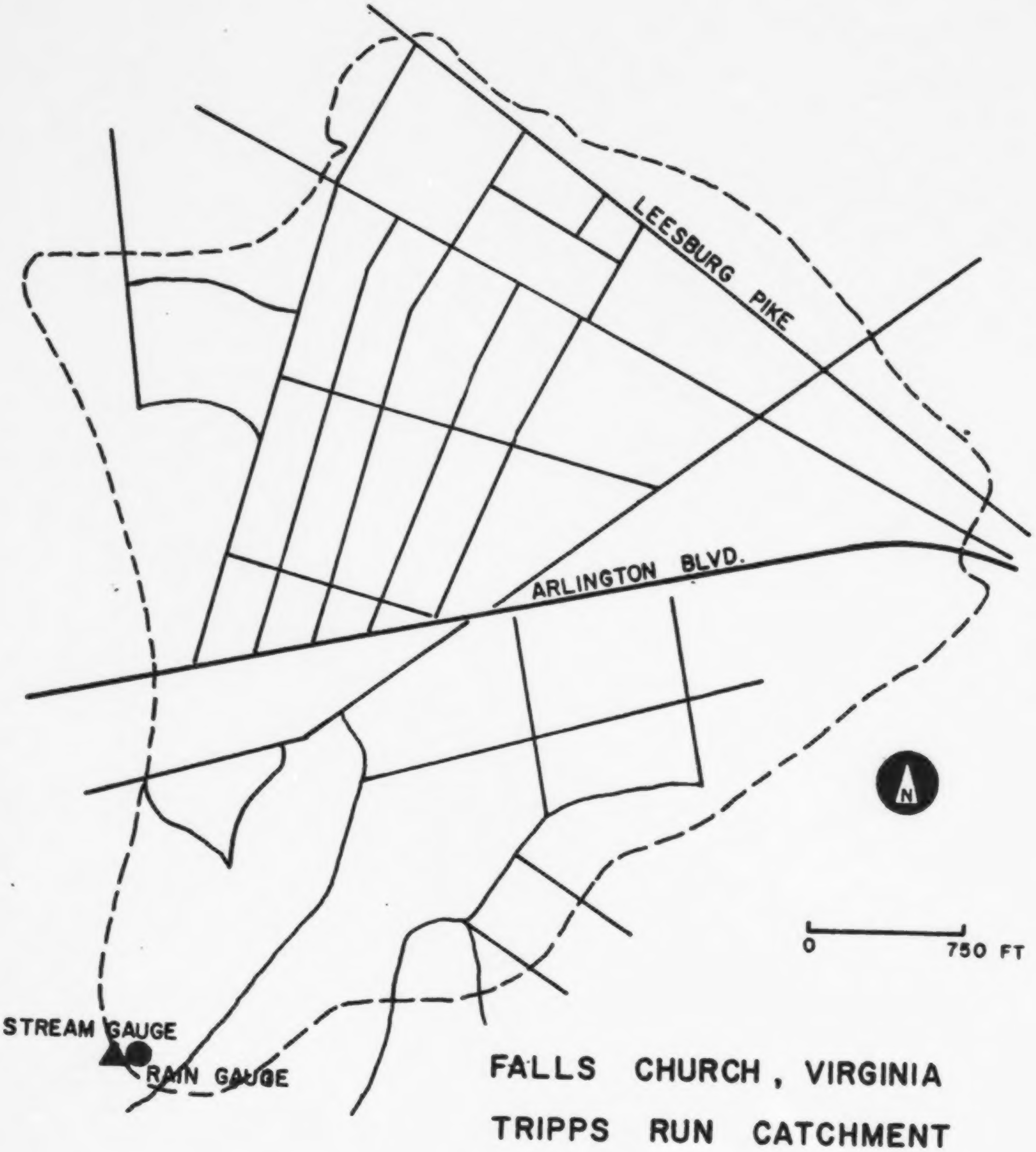
Table VIII-11. Quantity Data - Falls Church

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Tripps Run Tributary	f_1	5-15	1	-	r_1	10	10	3/63-10/67

f_1 - Stage measurements by a Stevens graphical recorder on a rated culvert. USGS Gage No. 1-6526.45

r_1 - Tipping bucket gage with 0.1 in. (2.5 mm) capacity.

Time synchronization: Good since rainfall and stage data recorded or same chart.



FALLS CHURCH, VIRGINIA
TRIPPS RUN CATCHMENT
(VA I 1)

Figure VII-6 Falls Church, Virginia, Tripps Run Catchment, 322 ac (130 ha).

WINSTON-SALEM, NORTH CAROLINA

The USGS gages the 384 ac (155 ha) Tar Branch basin at Walnut Street in Winston-Salem. Keypunched rainfall-runoff data were made available to UF through the courtesy of the Illinois State Water Survey who utilized them in testing the RRL and ILLUDAS models (49, 50). The data have also been used for hydrograph analyses (171, 176). Tucker (42) provides additional information on the basin and gaging installations.

State and City Code: NC 01

Table VIII-12. Catchment - Winston-Salem

No.	Name	Area ac (ha)	Sewerage	Total Paved Area, %	Channel Length, mi (km)	Channel Slope	Land Use
1	Tar Branch	384 (155)	Storm	59	1.27 (2.03)	0.0295	Residential and business

Table VIII-13. Quantity Data - Winston-Salem

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Tar Branch	f_1	5	1	-	r_1	5	17	6/68-12/69

f_1 - Continuous stage record above a rated culvert. Fischer-Porter automatic data recorder. USGS Station no. 20115843.

r_1 - Float-type gage with punched output onto paper tape.

Time synchronization: Good since both rain and stage gage use same clock.

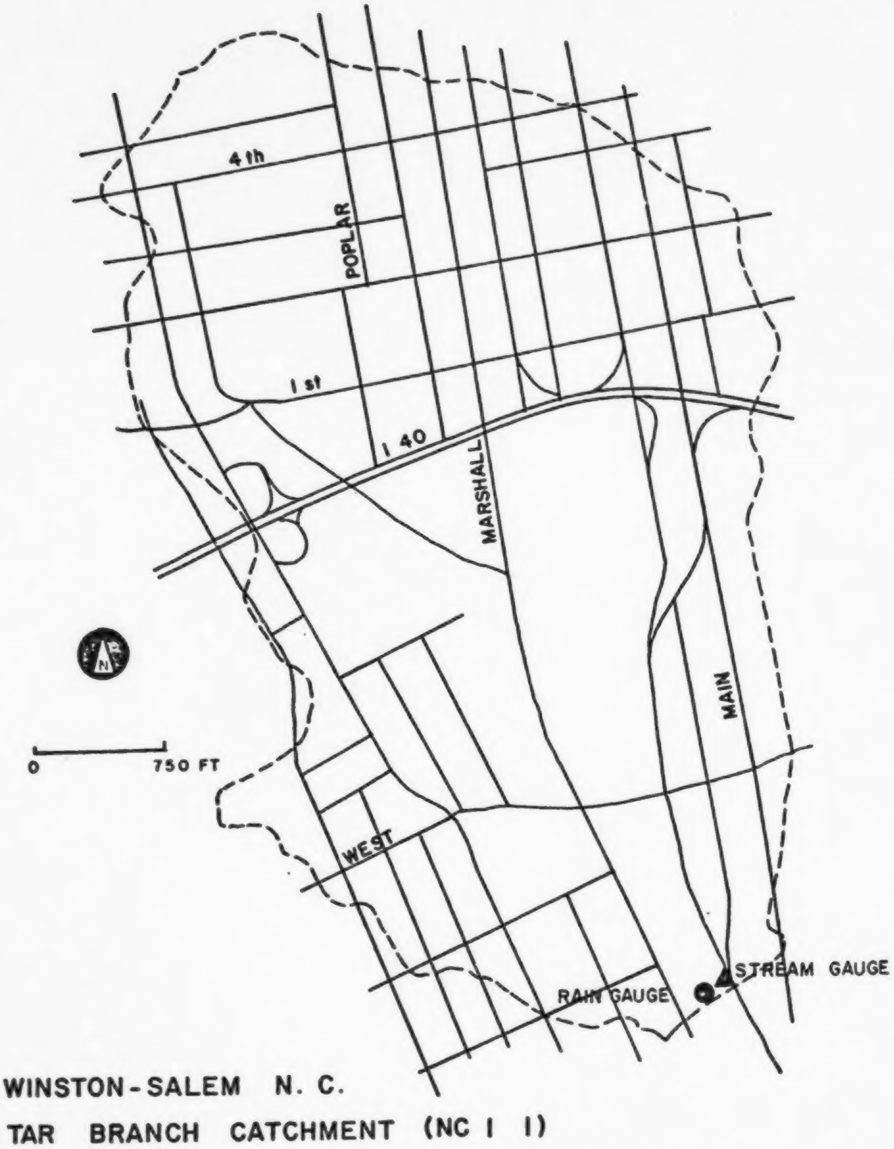


Figure VIII-7 Winston-Salem, N.C., Tar Branch Catchment, 384 ac (155 ha).

JACKSON, MISSISSIPPI

USGS data have been collected since 1965 on the residential Crane Creek basin in Jackson and utilized by the Illinois State Water Survey for RRL and ILLUDAS model verification (49, 50). Keypunched data were obtained by UF through the courtesy of the Survey. The data have also been used for unit hydrograph analyses (171) and model comparisons (172). Other information on urban runoff in Jackson is available in a USGS report by Wilson (136).

State and City Code: MS 01

Table VIII-14. Catchment - Jackson

No.	Name	Area ac (ha)	Sewerage	Total Paved Area, %	Channel Length, mi (km)	Channel Slope	Land Use
1	Crane Creek	285 (115)	Storm	24	0.8 (1.3)	0.0067	Residential

Table VIII-15. Quantity Data - Jackson

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Crane Creek	f_1	5	1	-	r_1	5	16	5/65-5/66

f_1 - Continuous stage record at a rated box culvert (Meadowbrook Dr.). Digital output on punched tape. USGS Station no. 4857.80.

r_1 - Float-type gage with punched output onto paper tape, using same clock as stage gage.

Time synchronization: Good since both rain and stage gage use same clock.

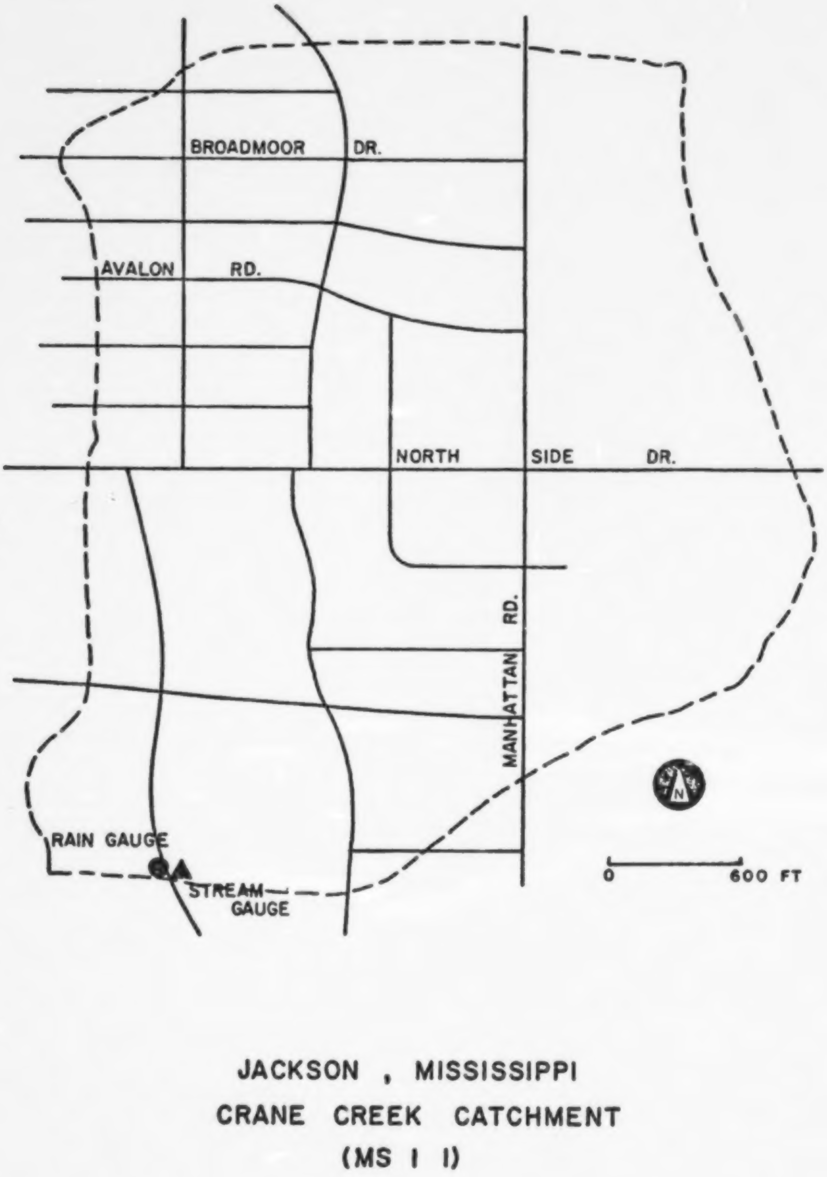


Figure VIII-8 Jackson, Mississippi, Crane Creek Catchment, 285 ac (115 ha).

WICHITA, KANSAS

USGS data have been collected on the residential Dry Creek basin in Wichita and utilized by the Illinois State Water Survey for RRL and ILLUDAS model verification (49, 50). Keypunched data were obtained by UF through the courtesy of the Survey. The data have also been used for studies of hydrologic effects of urbanization in the area (179).

State and City Code: KS 01

Table VIII-16. Catchment - Wichita

No.	Name	Area ac (ha)	Sewerage	Total paved Area, %	Land Use
1	Dry Creek	1883 (762)	Storm (open channel)	31	Residential with commercial strips

Table VIII-17. Quantity Data - Wichita

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Dry Creek	f_1	5	1	-	r_1	5	8	5/64-7/65

f_1 - Continuous stage record at a rated bridge (Lincoln St.). Digital output on punched tape. USGS Gage No. 7144330.

r_1 - Float-type gage with punched output onto paper tape, using same clock as stage gage.

Time synchronization: Good since both rain and stage gage use same clock.

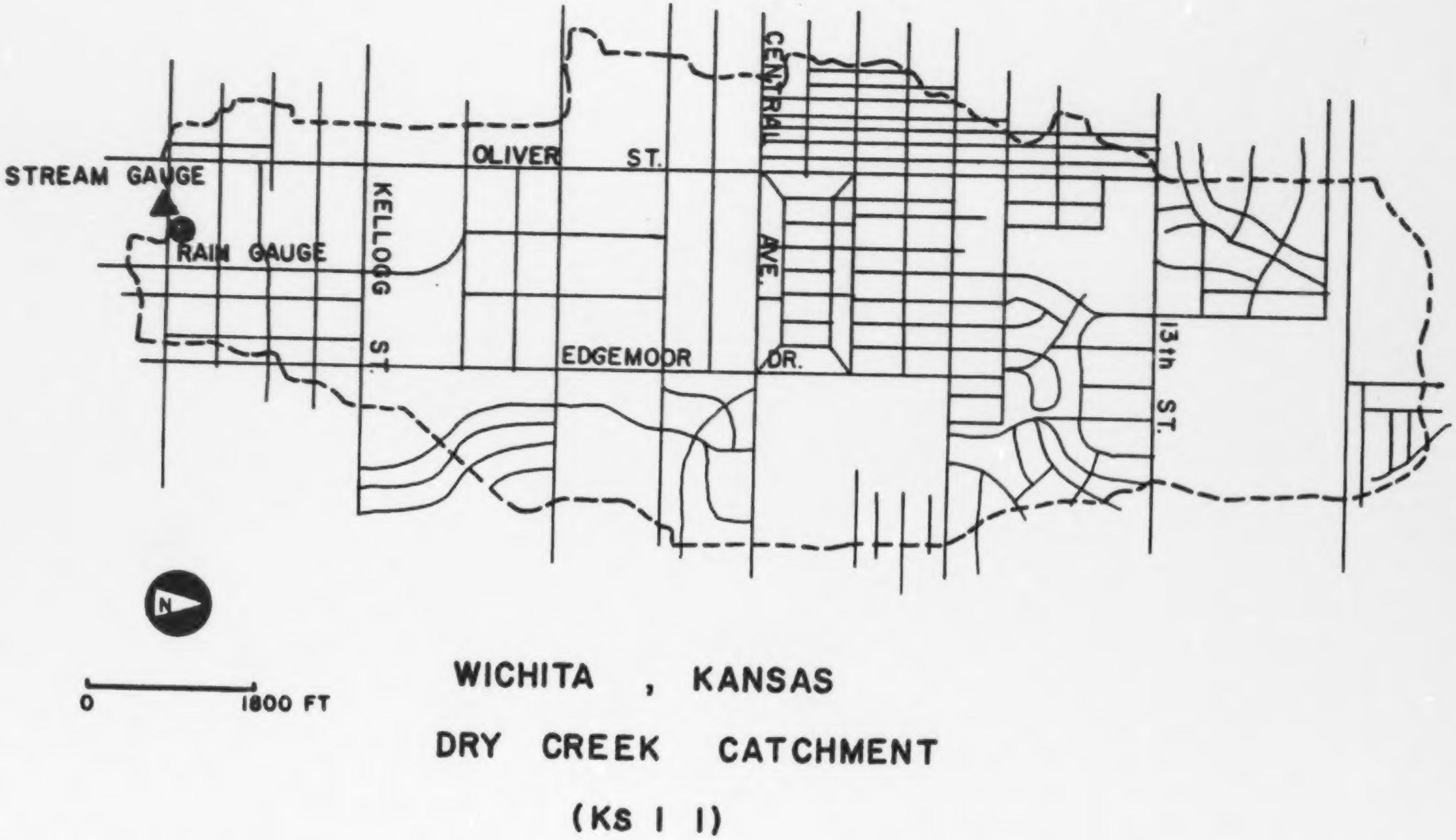


Figure VIII-9 Wichita, Kansas, Dry Creek Catchment, 1183 ac (762 hå).

WESTBURY, LONG ISLAND, NEW YORK

In connection with a larger hydrologic study in Nassau County, New York, the USGS monitored inflow from the 14.7 ac (6.0 ha) residential Woodoak Drive basin into a small recharge basin. Seaburn reports the details of the 1966-67 study (137) with further information on the flow measurement techniques (138) and related hydrology efforts in the area (139). Thus, other parameters related to the recharge basin were measured as well. The Illinois State Water Survey utilized the data for verification of the RRL and ILLUDAS models (49, 50). Keypunched data were obtained through the courtesy of the Survey.

State and City Code: NY 01

Table VIII-18. Catchment - Westbury, L.I.

No.	Name	Area ac (ha)	Sewerage	Area of Streets, %	Total[a] im-perviousness	No. Houses	Land Use
1	Woodoak	14.7 (6.0)	Storm	12	33	52	Residential

[a] Includes streets, driveways, sidewalks and roofs.

Table VIII-19. Quantity Data - Westbury, L.I.

No.	Catchment	Flow		Rain				No. of Storms	Period
		Type of flow meas.	Sampling Interval, min	Gages Used No. in Catchment	Gages Used No. near Catchment	Type	Sampling Interval, min		
1	Woodoak	f_1	5	-	1	r_1	10	10	9/66-5/68

f_1 - Continuous stage record at a V-notch weir in 24 in. (61cm) concrete outlet pipe (only pipe in basin). Digital output on punched tape.

r_1 - Weighing bucket gage located about 900 ft. (274 m) southeast of basin.

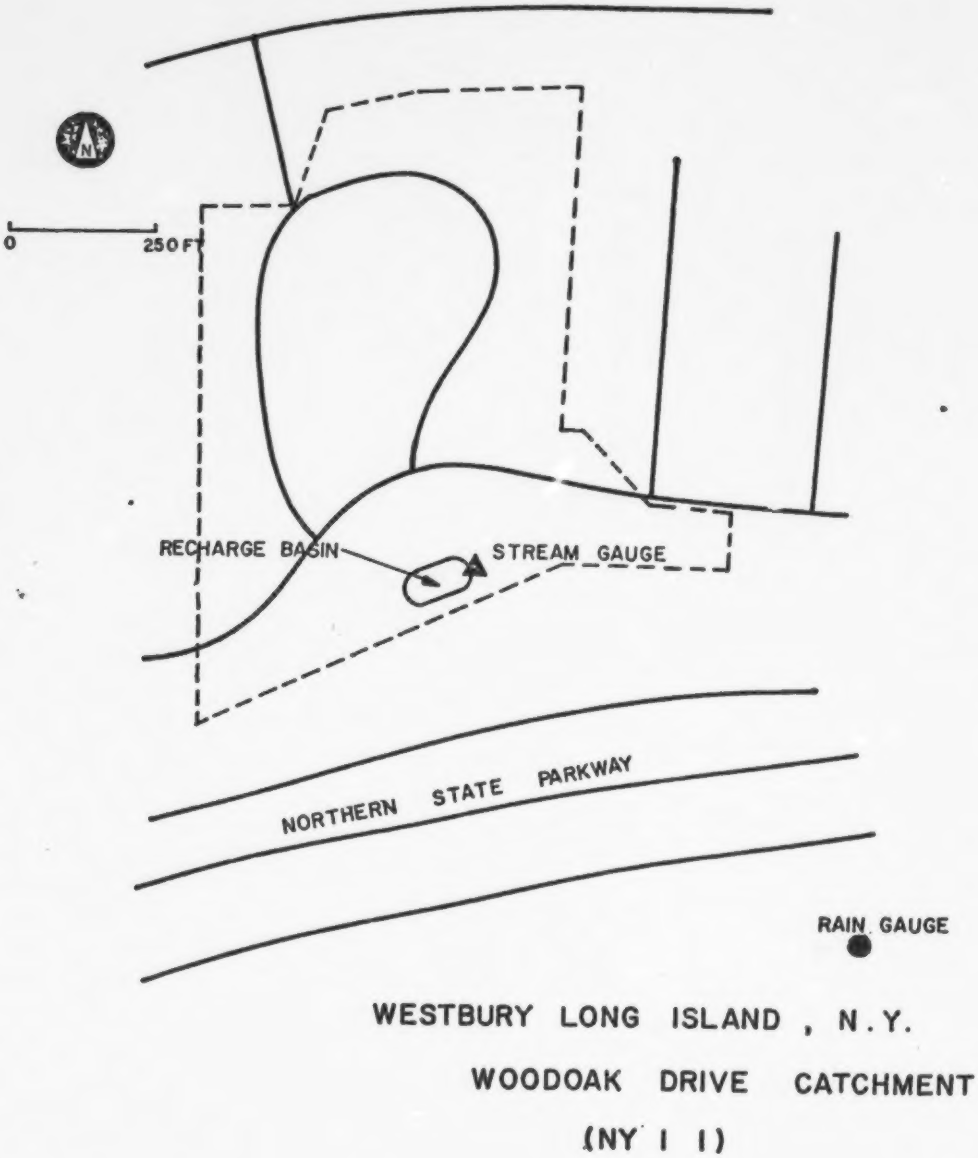


Figure VIII-10 Westbury, Long Island, New York, Woodoak Drive Catchment, 14.7 ac (6.0 ha).

PHILADELPHIA, PENNSYLVANIA

The 5326 ac (2156 ha) Wingohocking basin is Philadelphia's largest combined sewer catchment. Tucker (40) describes in detail the gaging program at Wingohocking which was initiated by the U.S. Public Health Service in 1963 and has been under the direction of the Philadelphia Water Department since 1965. Guarino, Radziul and Greene (140) discuss Wingohocking in the context of overall combined sewer problems in Philadelphia. Tucker (41) also provides additional information on the city's gaging program, plus more detailed information on the raingage network within the city (38). There are four raingages which service the Wingohocking area. Keypunched rainfall-runoff data were obtained through the courtesy of the Illinois State Water Survey who used them for RRL and ILLUDAS verification (49, 50). They indicate a possible change during 1966 in the rating curve used for flow calculations. The data have also been used for SWMM verification (102) in which some of the composited quality samples are utilized. These composited quality data are not included in the data base. SWMM input data are also given in reference 102. Additional SWMM simulations of several of the storms included in this data base have been performed by Hagarman and Dressler (141).

State and City Code: PA 02

Table VIII-20. Catchment - Philadelphia

No.	Name	Area ac (ha)	Sewerage	1960 Population	Imperviousness %	Length of Sewers, miles (km)	Land Use Percentages
1	Wingohocking	5362[a] (2171)	Combined	173,000	75	45 (72)	Single Family Res. 84.2, Multi-Family Res. 9.0, Open 6.8

[a] Reference 40. Reference 102 gives 5432 ac (2199 ha) and references 49 and 50 give 5326 ac (2156 ha).

Table VIII-21. Quantity Data - Philadelphia

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Wingohocking	f_1	15	2	3	r_1	5	12	7/67-8/68

f_1 - Depth measurements 450 ft (137 m) upstream from calibrated (physical model) broad-crested weir, which is 87 ft (27 m) upstream from 21 by 24 ft (6.4 by 7.3 m) horseshoe-shaped combined sewer outfall. Continuous depth record on strip chart from Pro-Tech model SM-205 depth recorder. Note: Given flows are overflows over weir. See Table VIII-23 for estimate of diversion into interceptor upstream of weir. Dry weather flow estimated to be about 30 cfs (0.86 m^3/sec).

r_1 - Weighing type with minimum scale divisions of 5 min. See Table VIII-22 for further information.

Time Synchronization: Rain gage network estimated to be within ± 5 min of clock time. Variation in 1 in/hr (2.5 cm/hr) speed of depth gage strip chart may lead to variations with clock time greater than 5 min.

Table VIII-22. Additional Rain Gage Information - Philadelphia
See also reference 38.

Gage No.	City Gage No.	Name	Parameter Code	Approximate Elev. ft	(m)	Thiessen Weight
1	18	Roosevelt	90050	300	(91)	0.58
2	8	Heinz	90049	140	(43)	0.12
3	17	Queen Lane	90048	220	(67)	0.15
4	7	Harrow Gate	90047	80	(24)	0.15
5	20	Shawmont[a]	90046			

[a] Located to west of catchment. Data also included in data base.

Table VIII-23. Estimated Interceptor Diversions - Philadelphia

The maximum capacity of the 102 in. (259 cm) interceptor is 270 cfs (7.7 m^3/sec). It also may receive up to 150 cfs (4.3 m^3/sec) from an upstream 60 in. (152 cm) pipe. Actual diversion through interceptor will depend upon storm pattern. However, in reference 102, the following estimates are given.

Total Flow (Diversion plus Overflow) cfs	(m^3/sec)	Estimated Diversion cfs	(m^3/sec)
0 - 500	(0 - 14.2)	Up to 200	(5.7)
500 - 1000	(14.2 - 28.3)	150	(4.3)
1000 - 1500	(28.3 - 42.5)	100	(2.8)
1500	(42.5)	50	(1.4)

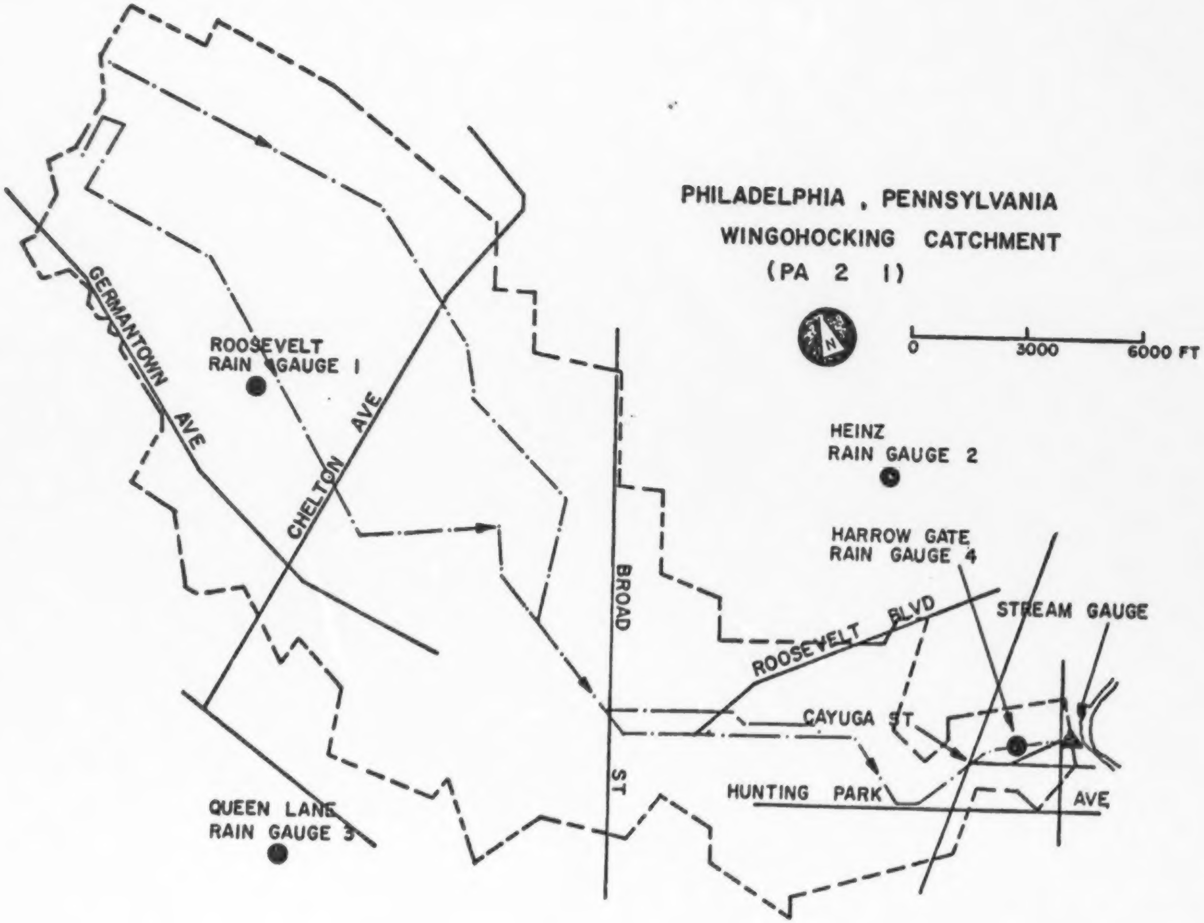


Figure VIII-11 Philadelphia, Pennsylvania, Wingohocking Catchment, 5362 ac (2171 ha).

LOS ANGELES, CALIFORNIA

The 252 ac (102 ha) Echo Park basin is a steep, residential catchment in north central Los Angeles. Copies of strip chart records of rainfall and runoff from 1954 to 1974, plus considerable catchment and other information, were received by UF directly from the City of Los Angeles, Department of Public Works, Bureau of Engineering. For purposes of the data base, reduced keypunched data were also obtained through the courtesy of the Illinois State Water Survey who used them for RRL and ILLUDAS model verification (49, 50). The HSP model has also been applied to this basin (142) during which it was estimated that measured flows could be in error by more than 20 percent due to uncertainty in the roughness and the supercritical flow velocities in the sewer. Terstriep and Stall (50) also point out that for a basin this steep, rainfall resolution at intervals less than 4 minutes would be desirable, but the 24-hour rain gage charts do not permit it.

State and City Code: CA 02

Table VIII-24. Catchment - Los Angeles

No.	Name	Area ac (ha)	Sewerage	Imperviousness, % 1956	Imperviousness, % 1970	1973 Population	Land Use
1	Echo Park	252 (102)	Storm	49.5	53.8	2850[a]	Residential with some commercial

[a] Estimate using population density of larger Echo Park District of Los Angeles.

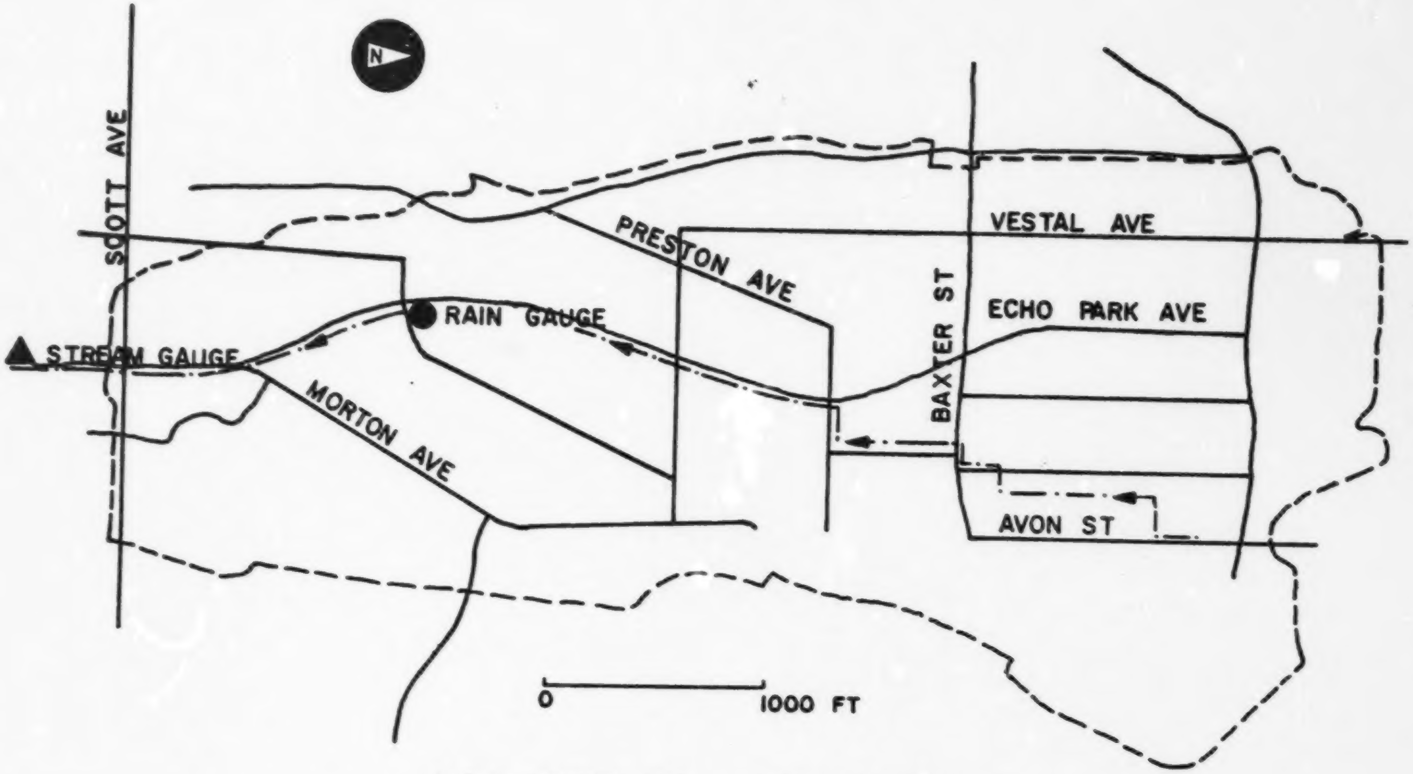
Table VIII-25. Quantity Data - Los Angeles

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Echo Park	f_1	2 - 10	1	-	r_1	4	18	2/58-12/70

f_1 - Rating curve from Manning equation (n=0.013, slope = 0.018) in 51 in.(130 cm) concrete arch storm sewer. Stage records on Stevens Type L recorder with 24 hr chart.

r_1 - Weighing bucket gage with 24 hr chart.

Time Synchronization: Possible errors due to separate clocks on rain and stage gages.



LOS ANGELES , CALIFORNIA
ECHO PARK CATCHMENT
(CA 2 1)

Figure VIII-12 Los Angeles, California, Echo Park Catchment, 252 ac (102 ha).

PORTLAND, OREGON

The City of Portland, Department of Public Works has collected rainfall-runoff data at the 75 ac (30 ha) residential Eastmoreland catchment since early 1975. More recently, 24 rain gages and 14 sewer monitors have been installed around the city, which are sampled at 15 second intervals and output stored on magnetic tapes. In addition, EPA Section 208 quality sampling programs have been initiated on the Eastmoreland catchment and four others. Data from these may be included in the data base at a future date.

Eastmoreland rainfall-runoff data have been used to calibrate an urban runoff model developed for the City of Portland (163). Additional information on the catchment is included therein.

State and City Code: OR 01

Table VIII-26. Catchment - Portland

No.	Name	Area ac (ha)	Sewerage	Average Slope	Population Density, persons/ac (persons/ha)	Land Use
1	Eastmoreland	75 (30)	Combined	0.04	18.2 (45)	Single family res.

Table VIII-27. Quantity Data - Portland

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Eastmoreland	f_1	0.75	0	1	r_1	0.25	24	3/75-8/75

f_1 - Brooks magnetic flow meter in 21 in. (53cm) C.S.P. (slope 0.10). Values logged on Metro data 616 Data Logger at 15 sec intervals whenever flow is greater than 1.0 cfs (0.028 m^3/sec). See Table VIII-28 for dry weather flow and infiltration information.

r_1 - Weather Measure No. P-501 tipping bucket rain gage with 0.01 in. (0.25 mm) bucket capacity. Interregated for number of tips every 15 seconds. Data base tape stores time and cummulative total (code number 90040) to avoid computing intensities over odd time intervals.

Time synchronization, rainfall-flow: Excellent since both records are recorded using same clock.

Table VIII-28. Dry Weather Flow and Infiltration Information - Portland

Average daily DWF for the Eastmoreland area has been measured at approximately 0.1 cfs ($0.003\ m^3/sec$). This corresponds roughly to 50 gal/day per capita ($0.19\ m^3/day$ per capita). Infiltration into the system is minimal and of the same order of magnitude as the average DWF. Hourly correction factors for DWF (excluding infiltration) have been determined and are given below.

Hour	Correction Factor[a]
0	1.0
1	0.6
2	0.3
3	0.2
4	0.1
5	0.1
6	0.1
7	0.6
8	0.5
9	0.6
10	0.4
11	0.4
12	1.3
13	1.1
14	1.0
15	0.95
16	0.95
17	1.1
18	1.2
19	1.4
20	1.7
21	1.6
22	1.5
23	1.3
	24.0

[a] Multiply by average DWF to get value at each hour. These values have been adjusted slightly from data supplied by city so that they sum to 24.0.

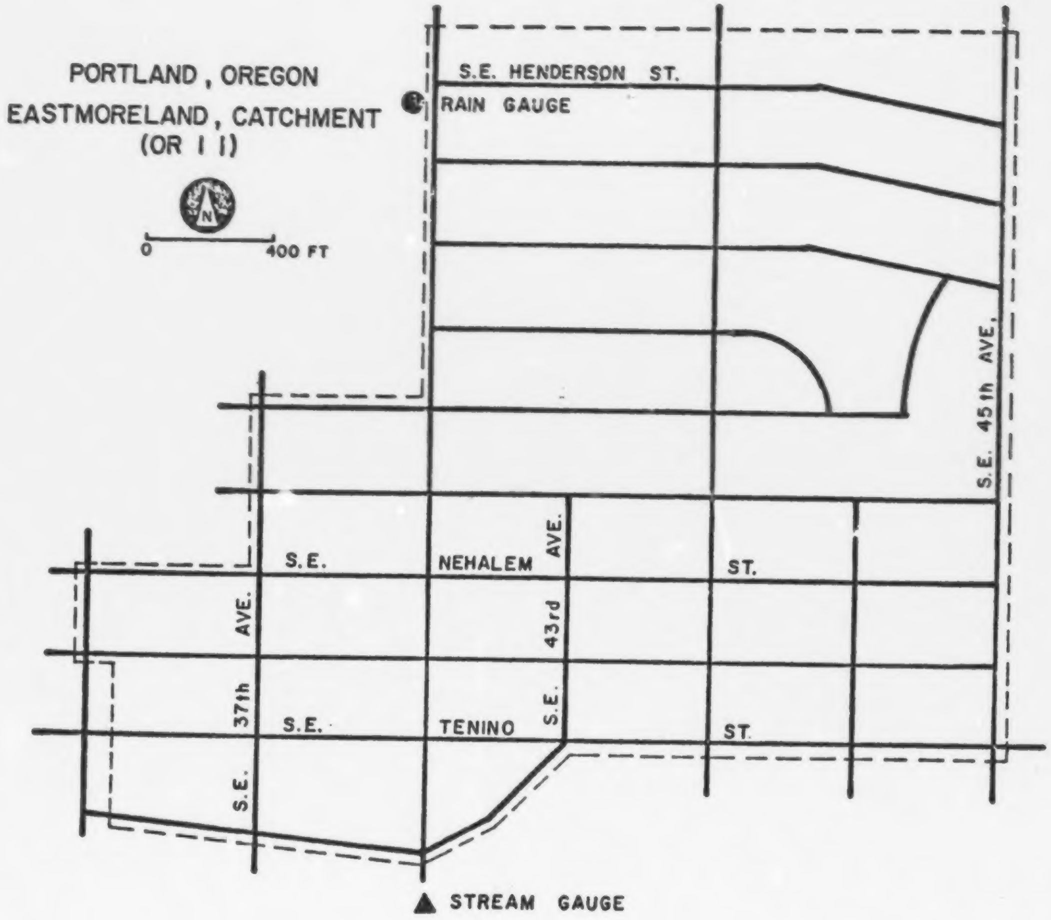


Figure VIII-13 Portland, Oregon, Eastmoreland Catchment, 75 ac (30 ha).

HOUSTON, TEXAS

In cooperation with the City of Houston, the USGS initiated collection of urban rainfall-runoff data at more than 20 sites in 1964. Annual reports have been published (e.g., 164, 165) containing catchment information and detailed results (i.e., hyetographs and hydrographs) from several storm events at several sites. Unfortunately, all but the latest reports are out of print and available only for short-term loan from the Houston offices of the USGS.

The data have been used in studies of the effect of urbanization in the Houston area (e.g., 166, 167). Data from Hunting Bayou have been used for ILLUDAS model calibration (50). Data from several Houston catchments along with many others were used by Brater and Sherrill (168) to develop unit hydrograph parameters. Keypunched data for the four catchments included herein were obtained from this latter study. Similar studies in urban hydrology are underway in Austin and Dallas.

The quality of these data are good. The measurements are carefully conducted, and the annual reports (164, 165) give a detailed time history of each storm. Quality sampling at several locations is now underway as a part of EPA 208 studies.

It is anticipated that quality data from the Woodlands project (80, 169) north of Houston will be included in addenda to the data base. Extensive quality data have been gathered; they await complete computerization before they can be transmitted to UF.

State and City Code: TX 01

Table VIII-29. Catchments - Houston

No.	Name	Area, ac (ha)	Sewerage	1960 Population Density, persons/ac (persons/ha)	Imperviousness,[e] %	Storm Sewered Area, %	Main Channel Slope	Drainage[g] Density mi/mi^2(km/km^2)	Land Uses
1	Hunting Bayou at Cavalcade St. (USGS Gage 80757.5)	768[a] (311)	Storm[d]	12.9 (31.6)	27 29				Res. approx. 50%, plus com., ind., hwy.
2	Hunting Bayou at Falls St. (USGS Gage 80757.6)	2509[b] (1016)	Storm[d]	10.5 (26.0)	20 21	14	0.00167	2.61 (1.63)	Res. approx. 70%, plus com., ind., hwy.
3	Bering Ditch at Woodway Dr. (USGS Gage 80738.0)	1894[c] (767)	Storm[d]	6.9 (17.1)	17 27[f]	68	0.00066	3.20 (2.00)	Res. approx. 70%, plus com., ind.
4	Berry Creek at Galveston Rd. (USGS Gage 80757.0)	3110 (1259)	Storm[d]	2.9 (6.0)	8 9	18	0.00114	2.11 (1.32)	Res., com., open

[a] Tributary to (basin contained in) Hunting Bayou at Falls St. Area prior to June 1, 1970, 659 ac (267 ha)

[b] Prior to October 1, 1973, 2240 ac (907 ha); prior to June 1, 1970, 2189 ac (886 ha).

[c] Prior to June 1965, 1773 ac (718 ha); June to Sept. 1965, 1658 ac (671 ha); Oct. 1965 to May 1967, 1722 ac (697 ha); June 1967 to March 1969, 1754 ac (710 ha). New drainage areas due to road construction.

[d] Mostly open channel drainage, heavily vegetated.

[e] First value, October 1964, second value, March 1969.

[f] Value of 22%, February 1967.

[g] Includes all open channels, ditches and storm sewers ≥ 36 in. (91 cm).

Table VIII-30. Quantity Data - Houston

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Hunting Bayou at Calvalcade St.	f_1	15-60	1	2	r_1	10-60	8	5/65-9/68
2	Hunting Bayou at Falls St.	f_1	15-60	2	1	r_1	10-60	11	5/65-11/69
3	Bering Ditch at Woodway Dr.	f_1	15-60	1	-	r_1	10-60	10	12/64-9/68
4	Berry Creek at Galveston Rd.	f_1	15-60	1	2	r_1	10-60	10	11/64-9/68

f_1 - Stage measurements with stage-discharge rating curve.

r_1 - USGS Type SR continuous rain gage.

Time synchronization, rain-flow: Good, since most storms utilize rainfall data measured at same location as flow.

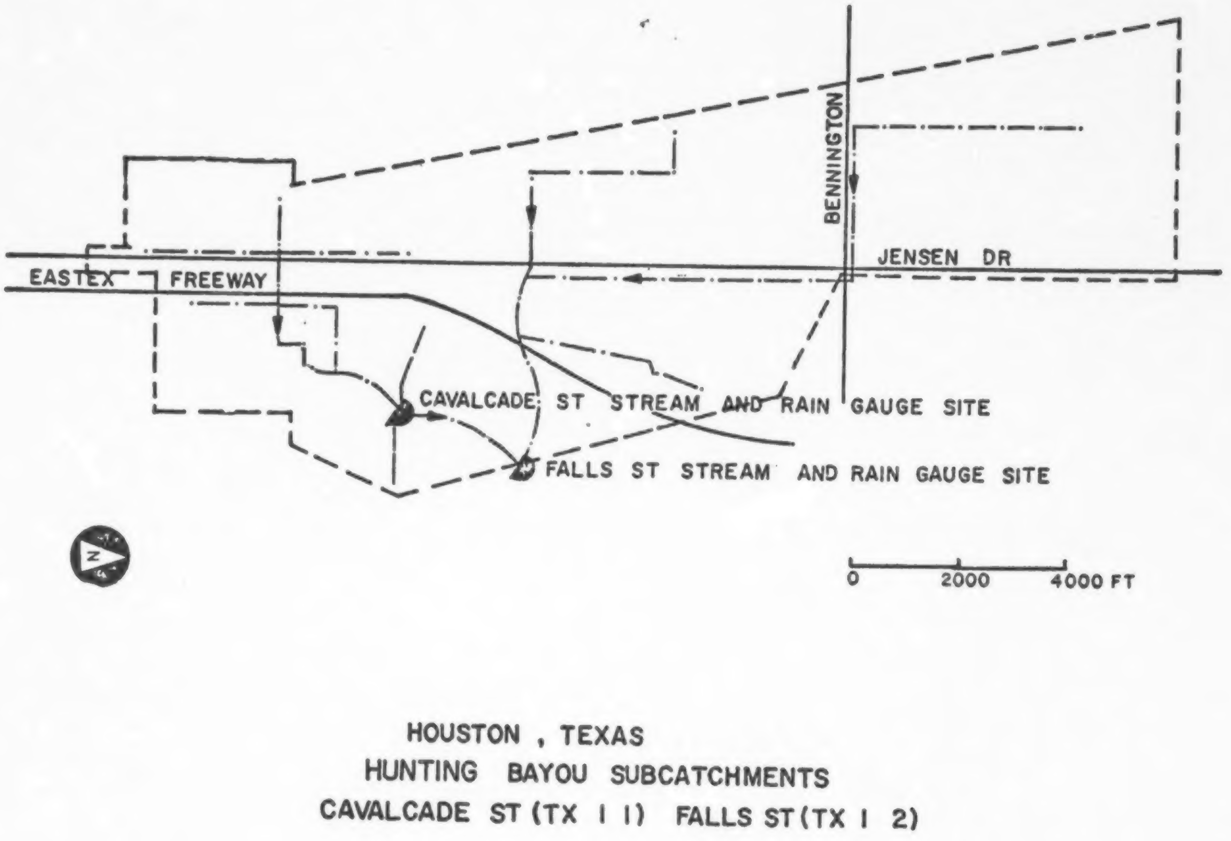

BENNINGTON
JENSEN DR
EASTEX FREEWAY
CAVALCADE ST STREAM AND RAIN GAUGE SITE
FALLS ST STREAM AND RAIN GAUGE SITE
N
0 2000 4000 FT
HOUSTON , TEXAS
HUNTING BAYOU SUBCATCHMENTS
CAVALCADE ST (TX I 1) FALLS ST (TX I 2)

Figure VIII-14 Houston, Texas, Hunting Bayou at Cavalcade St. Catchment, and Hunting Bayou at Falls St. Catchment, 768 ac (311 ha).

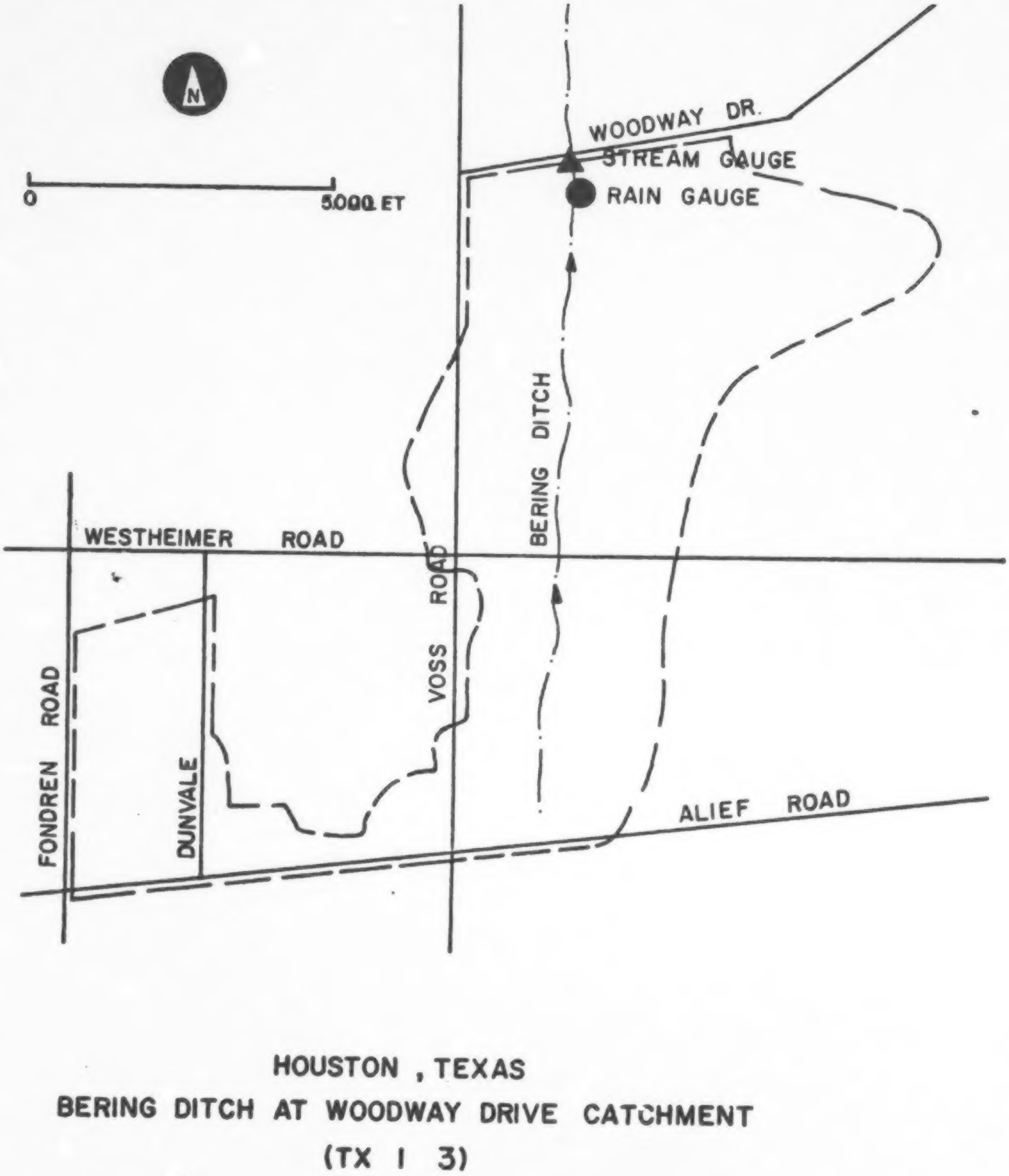


Figure VIII-15 Houston, Texas, Bering Ditch Catchment, 1894 ac (767 ha).

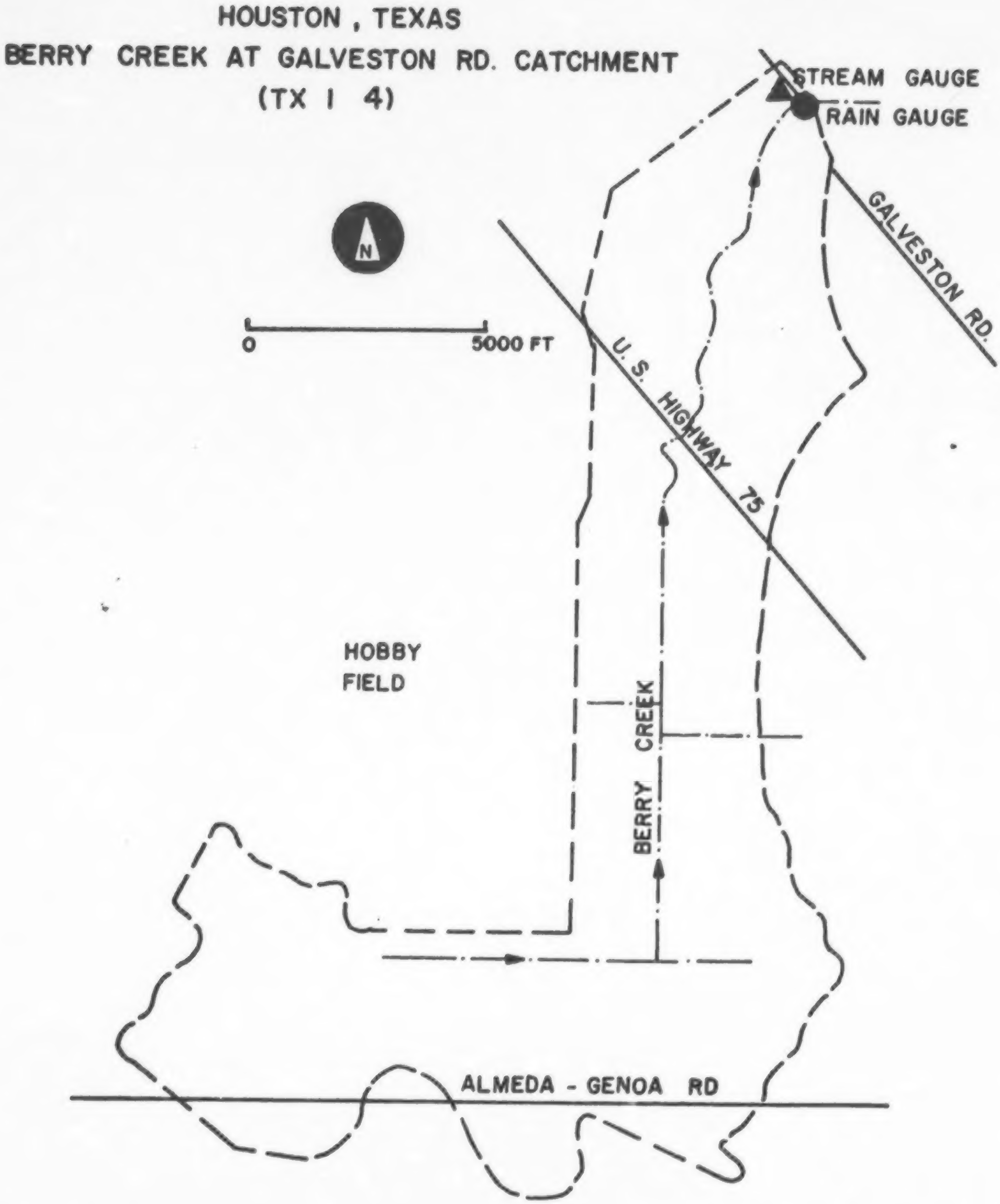


Figure VIII-16 Houston, Texas, Berry Creek Catchment, 3110 ac (1259 ha).

SALT LAKE CITY, UTAH

Through a contract between the Federal Highway Administration and Utah State University, (contract number DOT-FH-11-7806), quantity data were gathered during rainfall seasons in 1972 and 1973 on two urban highway cross-sections in the Salt Lake City area.

In addition, minimum and maximum temperatures and wind speeds for each runoff event were measured along with antecedent soil moisture levels for several runoff events in 1973. These data are included in tabular form in this report.

Further information on this study (along with the information contained herein) can be found in the final report(159). The data were taken directly from the report and keypunched by the University of Florida.

State and City Code: UT 01

Table VIII-31 Catchments - Salt Lake City

Number	Name	Area, ac (ha)	Sewerage	Soil Type	Land Use
1	Layton (Hwy) (Near Gentile Street on I-15)	1.35 (0.55)	Storm[a]	Well aggregated clay loam	Roadway (impervious) and sideslope paved or grassed (crested wheat grass)[b].
2	Parleys Canyon I (Hwy) (33rd South Street and I-215)	0.54 (0.22)	Storm[a]	Sandy loam with some silty clay lenses of very loose, poorly aggregated structure.	Drainage from a sideslope to a gutter.
3	Parleys Canyon II (33rd South Street and I-215)	0.55 (0.22)	Storm[a]	Sandy loam with some silty clay lenses of very loose, poorly aggregated structure.	Drainage from a roadway (4 traffic lanes) to a curb and gutter[b].

---

[a] Open channel, roadside drainage.

[b] See Figures VIII-18 and VIII-19

Table VIII-32 Quantity Data - Salt Lake City

		Flow		Rain					
				Gages Used					
No.	Catchment	Type of flow meas.	Sampling Interval, min	No. in Catchment	No. near Catchment	Type	Sampling Interval, min	No. of Storms	Period
1	Layton (Hwy)	f_1	1 - 60[a]	7	6	r_1 (7 gages) r_2 (6 gages)	2[b] Days[c]	23	9/72-11/73
2	Parleys Canyon I (Hwy)	f_1	1 - 60[a]	4	9	r_1 (7 gages) r_2 (6 gages)	2[b] Days[c]	42	8/72-10/73
3	Parleys Canyon II (Hwy)	f_2	1 - 60[a]	4	9	r_1 (7 gages) r_2 (6 gages)	2[b] Days[c]	42	8/72-10/73

---

f_1 - 90° bobbed tailed cutthroat flume. Calibrated in laboratory. Stage measured using a Belfort 5-FW-1 level recorder.

[a] Flow monitored continuously, data reduced to varying time increments.

[b] Rainfall monitored continuously for Belfort gages, data reduced to varying time increments.

[c] Rainfall measured with Truchek gages at the time the gages were serviced (various days).

f_2 - 2 foot, acute angled, V-notched cutthroat flume. Water level is sensed with a helical wound electrical depth sensor and remotely recorded on an Esterline Angus minigraph recorder.

r_1 - Belfort 5-780 dual traverse, 6 inches per traverse, weighing recording gage.

r_2 - Weather Measure model P567, 6-inch capacity Truchek rain gages.

Table VIII-33 Minimum and Maximum Temperature During Runoff Events, Winds, and Wind Direction - Layton Site

Date	Runoff Time		Temperature, °F[b]		Wind		
					Speed, miles/hr[c]		
	Start	End	Max.	Min.	Max.	Min.	Direction
1972							
5 Sept.	5:28P	9:40P	71	60	7	1	NE
19 Sept.	2:08A	4:10A	65	46	NR	NR	NR
5 Oct.	7:56A	10:00A	46	44	3	0	NE
9 Oct.	1:55A	2:50A	52	44	2	0	S
20 Oct.	3:16A	10:00A	44	38	3	0	W
20 Oct.	4:16P	6:52P	54	41	5	2	E
23-24 Oct.	9:52P	1:40A	57	27	3	0	E
28-29 Oct.	9:50P	1:12A	29	29	10	3	NNE
4-5 Nov.	-	-			7	0	NNE
1973							
17 April	8:22A	11:52A	NR[a]	NR	5	2	N
17 April	12:42P	3:58P	NR	NR	5	3	N
28 April	5:38P	7:51P	NR	NR	NR	NR	NR
29 April	8:46A	2:21P	60	54	NR	NR	NR
25 May	5:53A	7:53A	59	57	2	0	NE
25 May	10:03A	2:43P	61	56	2	0	NE
25 May	7:52P	11:44P	52	51	3	2	S
26 May	12:04A	4:29A	50	48	3	0	E
18 July	6:46P	7:53P	76	68	32	5	SSW
19 July	12:13P	6:33P	74	68	10	0	NW
2 Sept.	12:41A	7:53A	32	29	10	2	SW
8 Sept.	12:33A	9:00A	39	35	NR	NR	NR
23 Sept.	9:14A	4:21P	50	32	17	0	NW
18 Nov.	7:40A	5:54P	46	28	10	0	S to NE

[a] Note: NR implies no record

[b] Note: °C = 5/9(°F-32)

[c] Note: 1 mile/hr = 0.477 m/sec

Table VIII-34 Minimum and Maximum Temperature During Runoff Events, Winds, and Wind Direction - Parleys Site

Date	Runoff Time		Temperature, °F[b]		Wind		
					Speed, miles/hr[c]		
	Start	End	Max.	Min.	Max.	Min.	Direction
1972							
13 Aug.	8:46P	9:00P	NR[a]	NR	NR	NR	NR
2 Sept.	9:02P	9:48P	NR	NR	9	2	SSW
5 Sept.	8:24A	9:03A	60	58	3	2	SSE
5 Sept.	10:59A	3:07P	54	52	7	4	NE
5 Sept.	3:07P	4:00P	54	52	7	4	NE
19 Sept.	1:40A	3:50A	56	52	5	3	NNE
19 Sept.	3:52P	4:32P	54	52	7	2	NNE
4 Oct.	8:14P	9:23P	49	46	8	3	NNE
4-5 Oct.	11:15P	1:14A	49	48	5	2	NE
9 Oct.	2:16A	6:32A	45	44	17	2	ESE
10 Oct.	3:12A	6:24A	50	43	12	2	S
20 Oct.	1:32A	7:45A	54	45	6	2	S
20 Oct.	8:54A	11:26A	54	45	NR	NR	NR
23-24 Oct.	10:26P	2:00A	43	40	NR	NR	NR
28 Oct.	9:43P	10:33P	36	28	20	3	SSW
29 Oct.	12:03A	3:45A	29	26	2	2	S
29 Oct.	4:16A	10:50A	28	26	NR	NR	NR
30 Oct.	2:28P	2:52P	32	26	9	2	S
30 Oct.	3:12P	3:30P	40	21	NR	NR	NR
5-6 Nov.	11:54P	6:09A	32	27	4	2	S

---

[a] Note: NR implies no record

[b] Note: °C = 5/9(°F-32)

[c] Note: 1 mile/hr = 0.477 m/sec

Table VIII-34 (concluded)

Date	Runoff Time		Temperature, °F[b]		Wind		
					Speed, miles/hr[c]		
	Start	End	Max.	Min.	Max.	Min.	Direction
1973							
12 April	9:31A	10:24A	NR[a]	NR	7	5	SW
17-18 April	2:13P	1:46A	89	68	6	3	NNE
19 April	10:44A	1:37P	90	85	8	2	NNE
19 April	1:52P	7:26P	90	74	5	2	NE
20-21 April	4:40P	2:01A	68	66	4	2	NNE
28 April	9:29P	11:54P	66	58	8	2	NNE
29 April	12:38A	2:14A	77	68	7	5	NE
29 April	6:41A	7:23P	84	68	5	2	S
20-21 May	4:52P	4:00P	69	60	11	2	NE
25-26 May	4:31A	7:44A	59	57	10	2	E
1 June	5:11P	6:50P	62	61	4	2	S
19 July	12:08P	6:35P	80	67	NR	NR	NR
19 July	6:35P	11:00P	71	65	NR	NR	NR
16 Aug.	3:50P	8:58P	70	48	19	4	NE
31 Aug.	11:08P	11:42P	NR	NR	6	2	NNE
1 Sept.	12:43A	1:00A	NR	NR	NR	NR	NR
1-2 Sept.	5:35A	12:10A	NR	NR	11	1	NE
2 Sept.	12:10A	1:32A	NR	NR	5	2	NE
23 Sept.	7:57A	3:32P	89	42	9	2	SSE
25 Sept.	1:23A	4:00P	66	44	8	3	NE
8 Oct.	2:24P	10:16P	30	26	16	3	NNE
23-24 Oct.	4:28P	12:30A	35	26	18	2	NNE

[a] Note: NR implies no record

[b] Note: °C = 5/9(°F-32)

[c] Note: 1 mile/hr = 0.477 m/sec

Table VIII-35 Soil Moisture Levels at the Beginning of Each Runoff Event - Layton Site

Date	Soil Moisture Content, %, at depth		
1973	0-152mm	152-305mm	305-610mm
18 July	4.89	2.20	5.15
19 July	16.93	10.58	7.45
2 Sept.	9.39	7.86	11.35
8 Sept.	16.94	15.49	13.46
23 Sept.	10.97	6.67	8.60
18 Nov.	14.78	11.84	10.61

Table VIII-36 Soil Moisture Levels at the Beginning of Each Runoff Event - Parleys Site

Date	Soil Moisture Content, %, at depth		
1973	0-152mm	152-305mm	305-610mm
19 July	6.86	6.07	9.62
16 Aug.	3.58	4.12	2.17
31 Aug.	3.58	4.12	2.17
1-2 Sept.	3.58	4.12	2.17
23 Sept.	12.98	12.26	14.05
25 Sept.	3.92	4.14	1.50
8 Oct.	19.77	16.76	14.07
23-24 Oct.	7.67	12.49	10.39

Table VIII-37 Parameter Codes for Rain Gages--Salt Lake City

Layton Site Gage No.	Parameter Code	Parleys Site Gage No.	Parameter Code
L1	90040	P1	90040
L2	90039	P2	90039
L3	90038	P3	90038
L4	90037	P4	90037
L5	90036	P5	90036
L6	90035	P6	90035
L7	90034	P7	90034

The locations of these gages are shown on Figures VIII-18 and VIII-19.

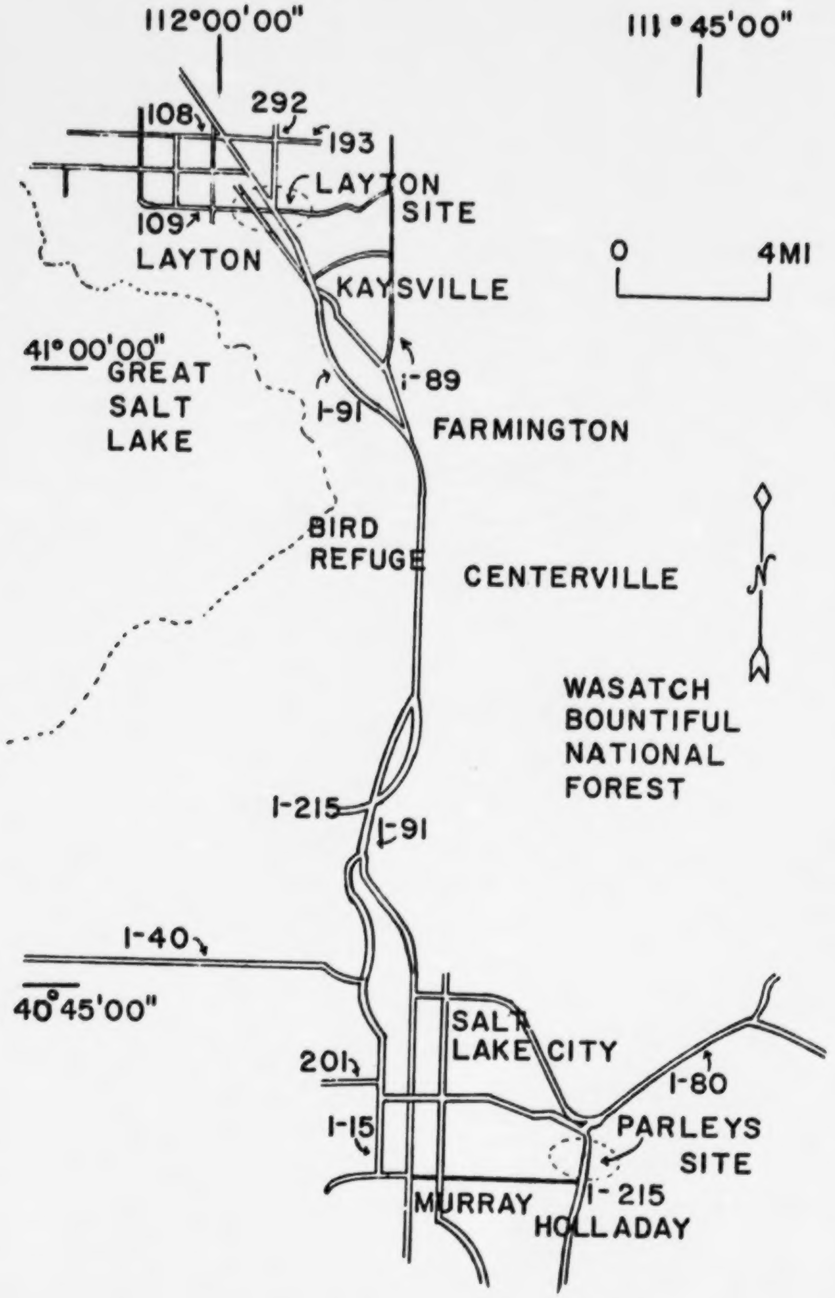


Figure VIII-17. Location map for the highway drainage monitoring sites in the Salt Lake City area.

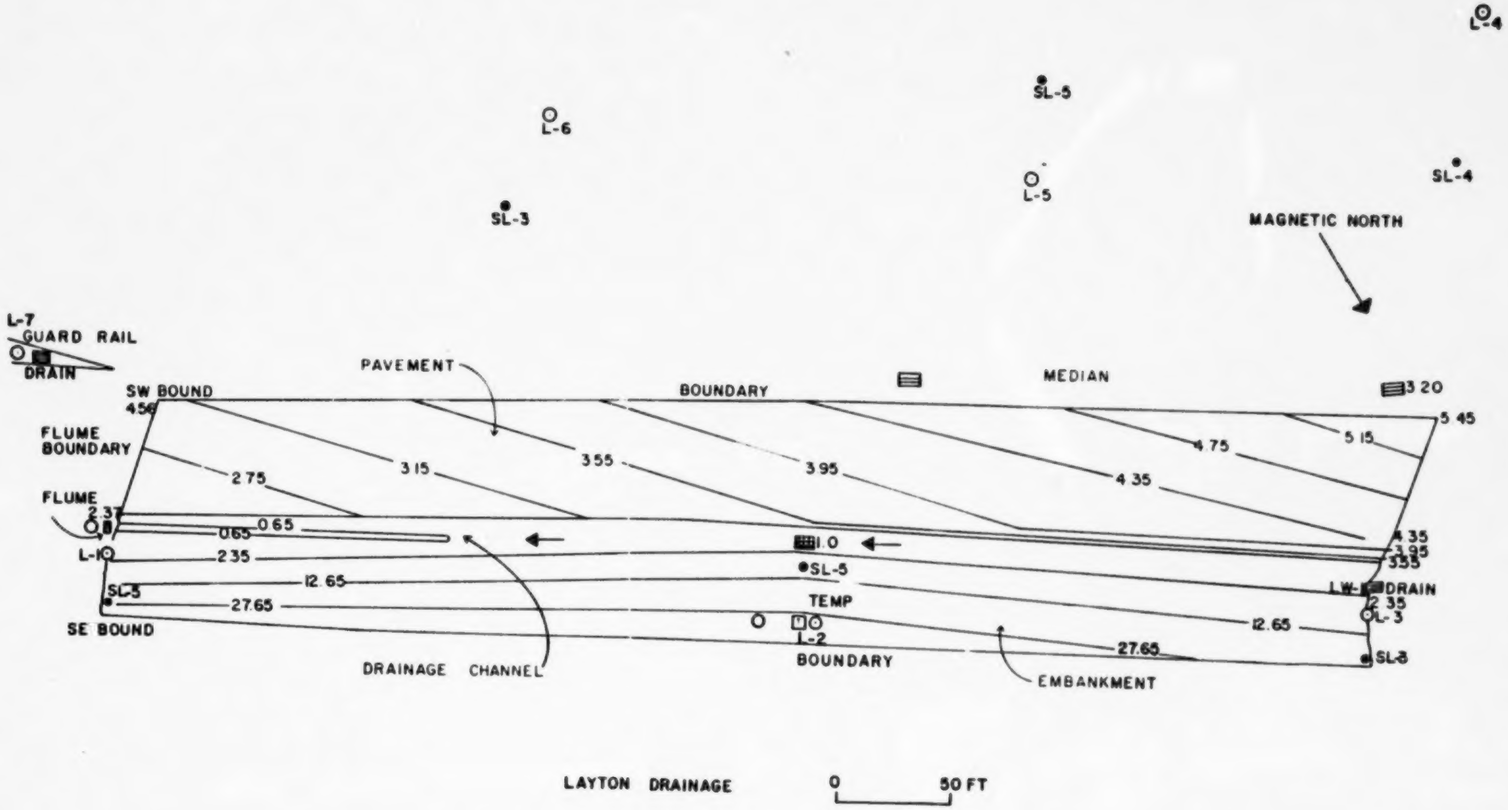


Figure VIII-18. Salt Lake City, Utah, Layton Catchment (UT0101), 58,625 ft^2 (5,449 m^2). See figure VIII-19 for legend of gages, etc. The left edge of the northbound lanes of I-15 forms the southwest boundary. Water from the drainage flows through the flume at the left and then free-falls into the grate inlet. Contour elevations are in feet, with the datum at the flume.

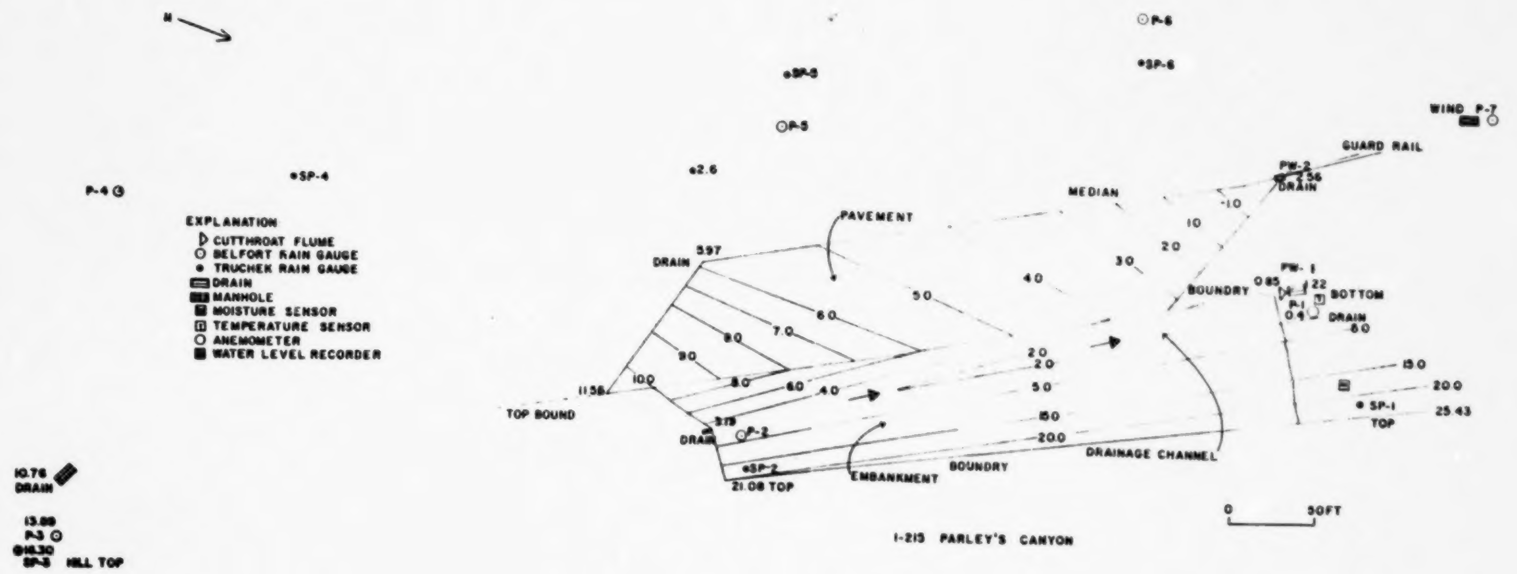


Figure VIII-19. Salt Lake City, Utah, Parleys Canyon Catchments. Catchment I (UT0102) drains the 23,529 ft^2 (2917 m^2) area from the top of the embankment to the edge of the pavement. Runoff is monitored at location PW-1. Catchment II (UT0103) drains the 23,812 ft^2 (2213 m^2) area of the asphalt-paved northbound traffic lanes of I-215. Runoff is monitored at location PW-2. A curb forms the west boundary of the paved drainage at the median. Contour elevations are in feet, with the datum at the flume at PW-1.

SECTION IX

MAINTENANCE, UPDATING AND DISSEMINATION

MAINTENANCE AND UPDATING

As indicatedin Section V, many data sources already extant may be suitable for inclusion in the data base. In addition, approximately 150 EPA Section 208 Areawide Waste Managment Studies have been conducted, a few of which collected storm event data of the type included in this report. As such sources are processed, periodic addenda to this report will be issued. These will consist primarily of documentation for new sources of the nature of that found in Sections VII and VIII. Simultaneously, the data will be placed on the magnetic tape with the previous sources. Updating of the tape for previous sources will also include addition of new storm events to those already included on the tape. Any changes in the catchment parameters (e.g., imperviousness, population) will also be noted.

DISSEMINATION

The format of the magnetic tape containing the data was described in Section VI. As discussed, retrieval of the data can take the form of a listing or various searches for desired parameters. No special software is required since the tape is merely a substitute for input from punched cards. Copies of the tape will be mailed by UF at cost (anticipated to be about $40) to those who request it. It is possible that the tape may also be made available through the National Technical Information Service (NTIS).

The data are presently (June 1979) being placed on the EPA STORET data management system, facilitating access by a wide variety of users as well as access to STORET software for purposes of analysis. All data are being stored, including rainfall and flow values that are not usually found with quality data in STORET. Station codes or identification numbers are those given in this report, (e.g., CA0101 is Baker St., San Francisco), except for stations that already possess STORET station codes (e.g., Broward County). Station descriptions incorporating these station numbers are presently in the STORET system and may be retrieved in accordance with usual STORET procedures.

While preparing the station descriptions, it was necessary to determine the latitude and longitude of each catchment sampling location, which was usually done using USGS quadrangle maps. This information is given for convenience in Table IX-1.

In-house modeling data vary in quantity from location to location. They generally consist of maps, photos, drainage plans and written descriptions of each location, but few sites have all such material. Available data will be made available on a loan basis for short time periods. Future refinements may include placing maps, plans, etc. on a microfiche file

Table IX-1 Catchment Latitude, Longitude and U.S.G.S. Quadrangle Map Information.

Except as noted, all coordinates are accurate to within one second and are of the quantity/quality sampling location.

Map names are titles of U.S. Geological Survey Quadrangle maps that contain the catchments.

City	Catchment	N.Latitude-W.Longitude (deg-min-sec)		Map Name
Broward County, FL	Residential	26-16-15	80-5-59	Boca Raton, FL
	Commercial	26-16-29	80-7-24	Boca Raton, FL
	Transportation	26-10-2	80-7-1	Pompano Beach, FL
San Francisco, CA	Baker St.	37-48-15	122-26-43	San Fran. North, CA
	Mariposa St.	37-45-52	122-23-12	San Fran. North, CA
	Brotherhood Way	37-42-44	122-28-10	San Fran. South, CA
	Vicente St. N	37-44-18	122-30-19	San Fran. South, CA
	Vicente St. S	37-44-18	122-30-19	San Fran. South, CA
	Selby St.	37-44-53	122-23-32	San Fran. South, CA
	Laguna St.	37-48-13	122-25-49	San Fran. North, CA
Racine, WI	Site I	42-44-3	87-47-1	Racine South, WI
Lincoln, NB	39 & Holdredge	40-49-40	96-39-51	Lincoln, NB
	63 & Holdredge	40-49-40	96-38-13	Lincoln, NB
	78 & A	40-47-57	96-36-51	Walton, NB
Windsor, ON	Labadie Rd.	42-18-42	82-59-0	Belle Isle, MI
Lancaster, PA	Stevens Ave.	40-1-53	76-17-21	Lancaster, PA
Seattle, WA	View Ridge 1	47-40-10	122-17-4	Seattle North, WA
	View Ridge 2	47-39-40	122-17-1	Seattle North, WA
	South Seattle	47-32-52	122-19-40	Seattle South, WA
	South Center	47-27-23	122-15-0	Des Moines, WA
	Lake Hills	47-37-3	122-6-35	Issaguah, WA
	Highlands	47-44-11	122-22-12	Seattle North, WA
	Cent. Bus. Dist.	47-37-5	122-20-31	Seattle South, WA
Durham, NC	Third Fork	35-58-37.5	78-54-33.3	Durham South, NC
Baltimore, MD	Gray Haven	39-16-19	76-29-15	Middle River, MD
	Northwood	39-22-9	76-35-16	Baltimore East, MD
Chicago, IL	Oakdale	41-56-2.5	87-44-57	Chicago Loop, IL
Champaign-Urbana, IL	Boneyard Cr.	40-6-39	88-13-43	Urbana, IL
Bucyrus, OH	Sewer Dist. 8	40-48-48	82-58-31	Bucyrus, OH
Falls Church, VA	Tripps Run	38-51-44	77-10-16	Annandale, VA

Table IX-1(continued)

City	Catchment	N.Latitude-W.Longitude (deg-min-sec)		Map Name
Winston-Salem,NC	Tar Branch	36-5-4	80-14-31	Winston-Salem E,NC
Jackson, MS	Crane Creek	32-21-2	90-9-50	Jackson,MS
Wichita, KS	Dry Creek	37-40-21	97-16-41	Wichita East,KS
Westbury, NY	Woodoak Dr.	40-45-30	73-36-43	Hicksville,NY
Philadelphia, PA	Wingohocking	40-0-51	75-5-49	Frankford,PA/NJ Germantown,PA
Los Angeles, CA	Echo Park	34-4-47	118-15-48	Hollywood,CA
Portland, OR	Eastmoreland	45-30-[a]	122-40-[a]	Lake Oswego,OR
Houston, TX	Hunting Bayou-			
	Cavalcade St.	29-48-1	95-20-0	Settegast,TX
	Falls St.	29-40-28	95-19-51	Park Place,TX
	Bering Ditch	29-45-21	95-29-44	Houston Heights,TX
	Berry Creek	29-40-59	95-15-11	Park Place,TX
West Lafayette,IN	Ross-Ade	40-26-19	86-54-29	Lafayette West,IN
Greenfield,MA	Maple Brook	42-35-30	72-36-0	Greenfield, MA
Northampton,MA	Market Street Brook	42-19-30	72-38-0	Mt. Holyoke,MA Easthampton,MA
Salt Lake City,UT	Layton	41-4-34	111-58-11	Kaysville, UT
	Parleys Canyon I	40-41-57	111-47-49	Sugarhouse, UT
	Parleys Canyon II	40-41-57	111-47-49	Sugarhouse, UT

[a] Accurate only to 10 minutes.

Table IX-1 (Concluded)

City	Catchment	N. Latitude (Deg-Min-Sec)	W. Longitude (Deg-Min-Sec)	Map Name
Dade County Florida	Miami	25 40 31	80 19 11	South Miami
Burlington, Ontario	Malvern	43 20 28	79 47 37	
Chicago, Il	Ravine Drive	42 11 02	87 47 18	Highland Park
	Woodfield	42 02 29	88 01 46	Palatine
	Centex	41 59 40	87 56 42	Elmhurst
	Seymour Ave.	42 16 09	88 00 14	Grayslake
	Glen Ellyn Rd.	41 54 50	88 03 45	Lombard
	Addison Ave.	41 55 41	87 56 32	Elmhurst
	Springingsguth Rd.	42 09 23	88 07 08	Palatine
	Park Forest South	41 26 30	87 40 46	Steger
	Winston Village	41 43 04	88 03 41	Romeoville
	State Highway, 83	41 47 46	87 56 47	Hinsdale
	Perry Road	41 51 02	88 34 08	Big Rock
	Beecher-Peotone Rd.	41 20 23	87 42 33	Beecher West
	Olcott Rd.	42 18 00	88 41 37	Garden Prairie
	Pioneer Woods	41 41 46	87 52 30	Sag Bridge
	Alden Road	42 25 16	88 30 46	Harvard
	Hawthorn Center	42 14 35	87 56 41	Wheeling
Denver, CO	Big Dry Creek	39 35 46	104 57 06	Englewood
	North Avenue	39 35 46	105 07 47	Fort Logan
	Thirty Sixth St.	39 46 23	104 58 46	Commerce City
	South Platte Trib.	39 51 58	105 00 36	Arvada
	Harvard Gulch	39 40 21	104 58 42	Englewood
	Concourse D Drain	39 46 08	104 53 12	Commerce City
Toronto, Ontario	East York	43 41 52	79 21 54	
	Brucewood	43 51 38	79 24 46	

SECTION X

STATISTICAL ANALYSIS OF URBAN RUNOFF DATA

INTRODUCTION

The thousands of data entries assembled as part of the urban rainfall-runoff-quality data base represent a sample from the vast population of such data. As such, they may be used to obtain insight as to the statistical character of urban runoff through generation of means, standard deviations, ranges, loads, etc. These parameters may be used in turn to develop causative relationships among water quality parameters and hydrologic and demographic factors (e.g., used in regression analyses). This latter work will be performed in the future using the characterization results that follow. These consist of the (flow-weighted) means, standard deviations (or variances), ranges, loads and certain other parameters for each event, plus averaged values for each catchment.

METHODS

Nature of Data

The statistical analysis of the data is complicated by several factors, typical of most storm event data included in the data base. From the following list, some or all items may apply for a given event.

1. Quality samples may not be given for all quantity samples.

2. Quantity samples may not be given for all quality samples.

3. The time interval between samples may vary.

4. The quality sampling duration may cover only a small portion of the runoff duration.

5. The start or end of the quantity (or quality) sampling may occur before or after that of the quality (or quantity) sampling.

6. Only a very few samples (e.g., two or three) of certain parameters may be taken during a given event.

7. Base flow samples (from which background levels may be derived) may be unavailable.

8. Sampling intervals may be large (e.g., one hour) making it difficult to determine variations.

The example data shown in Figure VI-2, page 6-13, for Seattle, illustrate problems 1 and 5 above, perhaps the most common of the list. For example, several gaps appear in the quality sampling, and the runoff sampling begins 45 minutes prior to quality sampling. However, if variations in concentrations are gradual during the latter part of an event, as is usually the case, additional sampling by the agency would have gained little additional information. Procedures to overcome some of these limitations are given below.

Storm "events" must be defined as well. As a practical matter, the events were separated, usually by different means, by the sampling agencies, prior to receipt by UF. For example, the USGS in Broward County (105) defines an event as any precipitation which is greater than 0.01 in. (0.25 mm) and which had 45 minutes of prior rain-free conditions. None of their data included in the data base have interevent times of less than 24 hours, however. Almost all other storm events in the data base are separated by at least 12 hours of intervening dry weather (no precipitation). (A minor exception occurs in the Portland, Oregon data in which an interevent time of six hours is used at one point.)

Statistical Parameters

In the context of analysis of urban runoff quality data, there are at least four methods by which the mean and variance may be obtained. (The variance is, of course, the square of the standard deviation.) These methods depend upon whether the data are flow and/or time weighted and are listed below and given in Table X-1.

1. Arithmetic (unweighted)
2. Time weighted
3. Flow weighted
4. Time and flow weighted

Data from which the sample calculations were derived are given in Table X-2 and plotted in Figure X-1.

Arithmetic computations are far and away the easiest and are performed by library routines in the STORET system, for example. But, if samples are taken at varying time intervals, some values (i.e., those taken at the short time intervals) will be unduly weighted with respect to others. Thus, time weighting can be used to give a true average value for a parameter plotted as a function of time (see Figure X-1).

Implications and meanings of the various methods may be studied using Table X-1 and Figure X-1. In spite of the short time period under consideration, the four methods yield quite different results for the particular storm used as an example. (The decreasing values reading down Table X-1 are an artifact of these data.) Since the higher COD values tend to occur during the first few minutes, their impact on the computed average is diminished when weighted with the corresponding lower flows at that time as compared to

Table X-1. Methods of Calculating Mean and Variance

Notation:

$\bar{C} \equiv$ Mean

$S^2 \equiv$ Variance

N = Number of samples

Q = Flow rate

t = Time interval

i = Subscript denoting value at ith time interval or ith sample

Summations are i=1 to N

Shown for comparison are computations for the storm of 4/15/74 for residential catchment, Broward County.

	COD (mg/1)
1. Arithmetic (Unweighted)	
$\bar{C} = \frac{\Sigma C_i}{N}$	150.9
$S^2_{\text{biased}} = \frac{\Sigma C_i^2}{N} - \bar{C}^2$	82.9^2
$S^2_{\text{unbiased}} = \frac{N}{N-1} S^2_{\text{biased}}$	88.0^2
2. Time Weighted	
$\bar{C} = \frac{\Sigma C_i \, \Delta t_i}{\Sigma \, \Delta t_i}$	140.2
$S^2 = \frac{\Sigma C_i^2 \, \Delta t_i}{\Sigma \, \Delta t_i} - \bar{C}^2$	81.9^2
3. Flow Weighted	
$\bar{C} = \frac{\Sigma C_i \, Q_i}{\Sigma \, Q_i}$	117.4
$S^2 = \frac{\Sigma \, C_i^2 \, Q_i}{\Sigma Q_i} - \bar{C}^2$	75.0^2
4. Time and Flow Weighted	
$\bar{C} = \frac{\Sigma C_i \, Q_i \, \Delta t_i}{\Sigma Q_i \, \Delta t_i}$	111.6
$S^2 = \frac{\Sigma C_i^2 \, Q_i \, \Delta t_i}{\Sigma Q_i \, \Delta t_i} - \bar{C}^2$	72.9^2

Table X-2. Storm Event Data for 4/15/74 for Residential Catchment, Broward County

Sample Number, i	Time of Day	Elapsed Time, t, min	Δt^a min	COD mg/l	Q cfs
1	6:32	0	0.5	249	0.36
2	6:33	1	1.0	196	0.53
3	6:34	2	1.0	208	0.71
4	6:35	3	1.0	65	0.88
5	6:36	4	1.0	289	1.26
6	6:37	5	1.0	145	1.65
7	6:38	6	1.5	57	2.03
8	6:40	8	1.5	75	2.80
9	6:41	9	0.5	74	2.92

[a] Time interval centered at time step i, $\Delta t_i = (t_{i+1} - t_{i-1})/2$.

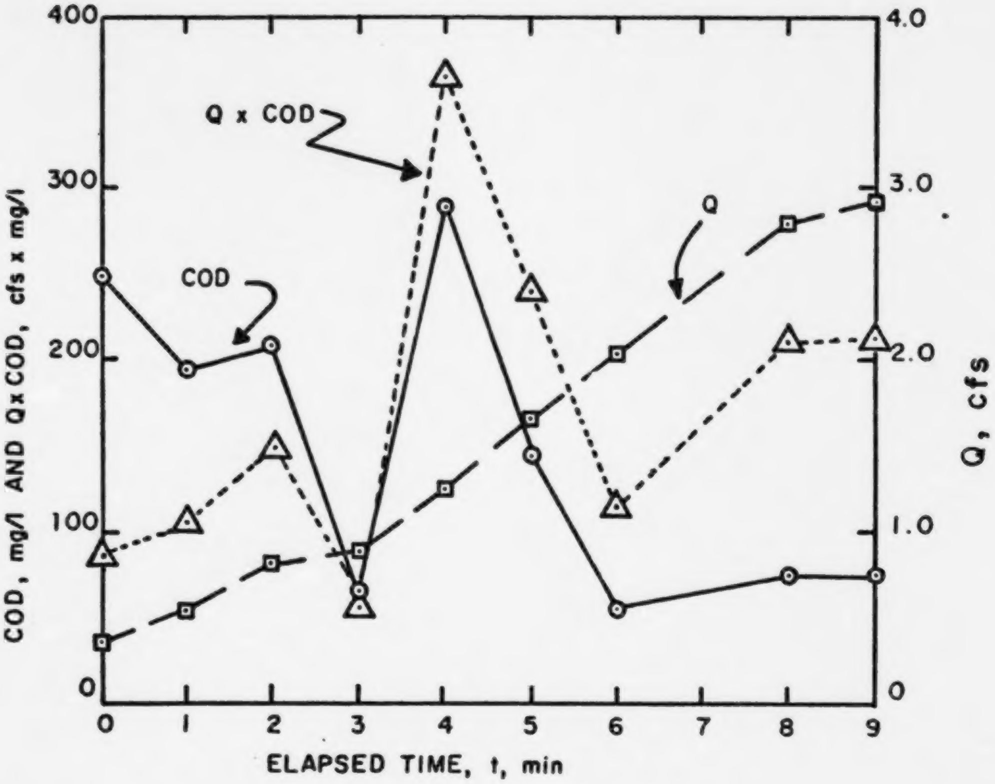


Figure X-1. Concentration, flow and mass load (flow x concentration) for event of 4/15/74 for residential catchment, Broward County.

an arithmetic average in which all values receive equal weight. Time weighting reduces the average for this example because the high first value applies over only half a time interval and because the seventh and eighth COD values (low in magnitude) receive a higher weighting because of the two minute interval between them. Time averaging is equivalent to integration (via the trapezoidal rule) of the COD versus time curve and dividing by the event duration (nine minutes for this example, although the quality measurements covered only a fraction of the total storm).

However, the essence of the problem is the flow weighting, since almost all useful loading parameters must be derived by considering the product of concentrations and flows. Again, the problem of unequal time intervals associated with each data value leads to use of the fourth method, time and flow weighting, for all computations. Average concentrations computed by this method thus reflect within-storm variations in flow and sampling interval and may be multiplied by total flow volume to compute total mass loads.

This is made more clear by examining the computation given in Table X-1 for the mean value using time and flow weighting.

$$\overline{C} = \frac{\Sigma\, C_i\, Q_i\, \Delta t_i}{\Sigma\, Q_i\, \Delta t_i} \qquad \text{(X-1)}$$

where $\overline{C}$ = mean concentration of parameter,

C_i = concentration of parameter at sample number (time step) i,

Q_i = flow rate at sample number (or time step) i, and

Δt_i = time interval at sample number (or time step) i.

Summations are over i = 1 to number of samples (or time steps) N, and the time interval, Δt_i, is computed as

$$\Delta t_i = (t_{i+1} - t_{i-1})/2 \qquad \text{(X-2)}$$

where t_i = time at sample number (or time step) i.

For the first and last samples, Δt is computed as half the following or preceding interval, respectively.

The numerator of equation X-1 is the total mass load of the storm event,

$$M = \Sigma\, C_i\, Q_i\, \Delta t_i \qquad \text{(X-3)}$$

where M = total mass load (e.g., lb or kg).

The denominator is the total runoff volume,

$$V = \Sigma Q_i \Delta t_i \qquad \text{(X-4)}$$

where V = total runoff volume (e.g., ft^3 or m^3).

Of course, the runoff volume can be converted to an equivalent depth over the catchment by dividing by the catchment area.

Thus, the time and flow weighted average concentration is simply the mass load divided by the runoff volume. This is, of course, why it is essential to have flow weighted means when it is desired to compute mass emissions from catchments.

The variance, S^2, (or square of the standard deviation, S) is calculated for the time and flow weighting method by

$$S^2 = \frac{\Sigma C_i^2 Q_i \Delta t_i}{\Sigma Q_i \Delta t_i} - \overline{C}^2 \qquad \text{(X-5)}$$

and has the usual interpretation as the (weighted) average squared deviation from the mean.

Equations X-1 through X-5 are used to compute means and standard deviations for all data in the data base. Also listed are ranges of quality parameters, selected simply by a search of the data for a given storm.

Interpolation

For the majority of the storm events found in the data base, there are segments within the event for which quality data have been reported but no flow value, or flow value but no quality data. The latter situation is the most frequent. Since the computations for mean and variance require a product of flow and concentration, either the missing parameter must be supplied or else the given parameter cannot be used. If the given parameter is not used then some of the supplied data are wasted. Furthermore, the computation of the total load (and mean concentration) may have a significant error. For instance, if a gap exists in the quality record over a time period when the flow increases temporarily, this increase in mass load will be missed if those data are not used.

The above considerations led to an interpolation scheme to supply "missing" values of either flow or quality parameters. In the computation scheme, it has been found most convenient to have a value for both at every sample number. Missing values are supplied simply by linear interpolation within the flow or quality parameter time series. Other ideas were also considered. For example, linear interpolation could be used along the mass load time series, and the missing value computed by division of the interpolated mass load by the given value. However, this tends to produce an inverse relationship between flow and concentration which may not exist in fact. And the interpolation scheme used is quicker, saving computer time during analysis of the many events. Interpolation for missing values within each individual time series has been used by Seattle Metro (John Buffo, personal communication, 1978) for analysis of their data and will be documented in a future report.

In order to give an idea of the extent of interpolation necessary for analysis of each storm event, the number of measured and interpolated points are listed for each parameter. In addition, the duration of quality sampling is listed for comparison with the total runoff duration.

No data have been extrapolated beyond the end (or prior to the beginning) of the sampling period. Although reasonable extrapolations could be made in some cases, this would require visual inspection of the data from every storm event, not possible for computer analysis of so many events and parameters.

Since the quality sampling duration is often less than the runoff duration, a reasonable estimate of the total mass load for the event can be made by taking the product of the computed average concentration and the total flow volume. This is often necessary in urban runoff studies to compute, say, total annual loads (e.g., 105). Its accuracy increases as the ratio of quality sampling duration to total runoff duration increases.

Background Concentrations

In combined sewers there is an existing dry-weather flow in the conduits at the beginning of a storm. This is often the case in storm drains as well due to infiltration or unknown connections to the system. Since wet-weather sampling measures the combination of existing dry-weather flow plus the storm runoff, it is desirable to subtract the background load from the total in order to isolate the contributions due to surface runoff and scour of deposited material (in a combined sewer). This can be done if initial conditions are known, e.g., the dry-weather flow rate and parameter concentrations just prior to the storm.

Unfortunately, automatic samplers often do not "trigger" until the first pulse of the runoff has already arrived at the sampler location. It is then necessary to make a subjective judgment as to background levels, usually by visual inspection of the data. Again, this is not possible for the present analyses. Alternatively, an arbitrary rule, such as using the first (or last) sample as the base flow value often fails in practice. Still another option would be to utilize infiltration-inflow studies performed under other programs (e.g., EPA "201" projects). These studies provide information on total dry-weather flow in sewers, but they are not readily available for all sites. Thus, background loads have not been subtracted from the loads computed herein. In one instance, Seattle, suitable background values have been determined by Metro personnel; they will be used in a future analysis. Fortunately, the background loads are usually small compared to the total load computed.

PRESENTATION OF COMPUTATIONS

Description of Summary Tables

For each catchment, three tables have been computed. The first presents quantity data for each storm event. Listed parameters included the date and time, precipitation and runoff durations and depths and preceding dry days, if available. This latter parameter is important in future analysis for causative effects; unfortunately, it is currently available for only a few catchments. This is because the assembled storm event data do not necessarily include all storms that occured during the agency's sampling program. In most cases, weather records will need to be examined to determine antecedent conditions.

The second table presents all the previously indicated calculations (mean, standard deviation, range, etc.) for each quality parameter for each event. For catchments with several parameters and events, this table is quite lengthy. A few parameters are not amenable to load calculations, e.g., temperature, color, conductivity, pH, etc. Flow weighted means and variances are still utilized, however. Coliform loads are given as total count MPN or MF (membrane filter), instead of pounds, and coliform concentrations are rounded to three significant figures. The total number of pages generated by these tables is about 400. Hence, they are not included in this report. However, they are available to interested parties for the cost of reproduction and possibly through NTIS in the future. Inquiries should be addressed to the authors.

The third table summarizes all the storm event quality statistics for each catchment A grand average concentration is computed as the ratio of the total computed load to total runoff volume

$$\bar{C}_c = \frac{\sum_{i=1}^{N} M_i}{\sum_{i=1}^{N} V_i} \qquad \text{(X-6)}$$

where $\bar{C}_c$ = average concentration of the parameter,

M_i = load for storm event i,

V_i = runoff volume for storm event i, and

N = number of events.

The flow weighted variance S_c^2 is computed as

$$S_c^2 = \frac{\sum_{i=1}^{N} \bar{C}_i^2 \cdot V_i}{\sum_{i=1}^{N} V_i} - \bar{C}_c^2 \qquad \text{(X-7)}$$

where $\bar{C}_i$ = average concentration for event i.

The range of the parameters and number of events are also listed. Finally, an average loading for the catchment is given in units of lb/ac-in. This can be computed either by dividing the sum of the loads by the catchment area and total inches of runoff or simply by converting the mean concentration in mg/l computed using equation X-6 to units of lb/ac-in. by multiplying by 0.2265.

Column headings for each parameter are identical to headings used for STORET output. The parameter code (e.g., 310 = BOD_5) is given first, followed by the abreviation and units used by STORET. Codes for all parameters are identified in Table VI-3 of the first report. Codes can be indicative of the laboratory method as well as the parameter itself. For example, total coliforms determined by the membrane filter technique could be given code number 31501 (depending on whether immediate or delayed and on the type of media); those determined as MPN could be given code number 31505.

For ease of programming, no attempt was made to round to three significant figures for other than bacteria. (Otherwise a separate format would have been required for each parameter, leading to time consuming complications.) Hence, calculated values should not be utilized beyond three significant figures.

Blank spaces under a column heading indicate the parameter was unavailable or not measured. This appears most often under "preceding dry days", which were usually not measured.

Summary Tables

The first and third tables discussed above thus provide the statistical results for 22 catchments with quality data. They are presented for each catchment in the following pages, in Tables X-3 to X-43. Two catchments, Vicente St. North and South in San Francisco, are analyzed for only one storm. Since a quality summary table is meaningless for this case, the event analysis (the second table discussed above) is given for these catchments and may be seen as an example of such tables.

As a brief comparison of results, average concentrations of BOD_5 and suspended solids (SS) for the 22 catchments are given in Table X-3. These are the only parameters sampled for all catchments. A few generalizations may be made. Combined sewers consistently have higher BOD values than do storm sewers (as is expected). SS values may not be so differentiated from these catchments, however. Too few catchments are analyzed to distinguish trends among land uses. The high BOD and SS values for Durham apparently result from the nature of the drainage channel which is an open channel filled with considerable refuse.

It is clear from examination of Table X-3 and the quality summary tables that there is a high variability among data from the same catchments. The coefficient of variation (standard deviation/mean) is often greater than 1.0, indicating a skewed distribution for most parameters. That is, high outliers are expected among the data. For this reason, the range listed for

Table X-3. Comparison of flow-weighted BOD$_5$ and suspended solids means and standard deviations by land use and type of sewerage.
Means and standard deviations are taken from the statistical summary table for each city and are calculated using equations X-6 and X-7.

City-Catchment	Storm or Combined Sewerage	00310[a]-BOD$_5$ Mean (mg/1)	Std.Dev. (mg/1)	Number of Events	00530[a]-Susp. Solids Mean (mg/1)	Std. Dev. (mg/1)	Number of Events
Single-Family Residential							
San Francisco,CA-Selby St.	C	38.1	30.0	8	215.4	146.0	8
Racine,WI-Site I	C	89.6	17.7	7	178.9	137.3	7
Lancaster,PA-Stevens Ave.	C	56.2	49.3	5	271.3	171.1	5
Broward County,FL-Residential	S	6.7	4.3	20	28.4[b]	16.7[b]	28
San Francisco,CA-Vicente St. N.	S	9.8	11.4[c]	1	48.3	29.2[c]	1
San Francisco,CA-Vicente St. S.	S	4.5	3.4[c]	1	45.8	29.3[c]	1
Lincoln,NB-39 & Holdrege	S	37.6	51.8	13	735.9	302.8	18
Lincoln,NB-63 & Holdrege	S	22.1	32.5	11	827.7	228.4	12
Lincoln,NB-78 & A	S	8.7	5.1	9	1532.0	780.4	10
Windsor,ON-Labadie Rd.	S	16.9	8.2	20	389.8	254.2	20
Seattle,WA-View Ridge 1	S	18.4	11.2	7	55.6	102.5	28
Seattle,WA-View Ridge 2	S	12.9	9.4	5	107.7	33.1	4
Seattle,WA-Lake Hills	S	6.3	2.9	5	61.3	9.9	5
Seattle,WA-Highlands	S	4.2	3.8	4	109.3	71.5	4
West Lafayette,IN-Ross-Ade	S	59.6	89.7	8	104.7	52.0	8
Greenfield,MA-Maple Brook	S	11.6	7.2	4	147.4	112.1	5
Multiple-Family Residential							
San Francisco,CA-Baker St.	C	22.9	6.0	3	90.7	14.5	3
San Francisco,CA-Brotherhood Way	C	45.6	24.7	3	654.8	524.6	3
San Francisco,CA-Laguna St.	C	46.3	8.8	2	210.7	101.0	2
Commercial							
Seattle,WA-Central Bus. Dist.	C	64.3	37.7	5	161.8	21.7	5
Seattle,WA-Southcenter	S	12.5	7.7	7	93.5	237.0	27

Table X-3(Continued)

City-Catchment	Storm or Combined Sewerage	00310-BOD$_5$ Mean (mg/l)	Std.Dev. (mg/l)	Number of Events	00530-Susp.Solids Mean (mg/l)	Std. Dev. (mg/l)	Number of Events
Industrial							
Seattle,WA-South Seattle	S	11.9	8.2	7	114.2	176.3	29
Mixture-Res., Com., Other							
San Francisco,CA-Mariposa St.	C	43.2	42.5	3	172.4	86.4	3
Durham,NC-Third Fork	S	127.3	13.6	2	1498.3	171.2	4
Northampton,MA-Market St. Brook	S	30.1	19.4	3	149.2	55.0	6

---

[a] STORET code for parameter. Refer to Table VI-3

[b] Parameter 70299 reported instead of 00530, i.e., suspended solids determined by evaporation instead of filtration.

[c] Standard deviation based on within-storm variation, 8 samples for BOD$_5$ and 10 samples for SS.

each parameter in the summary tables may be misleading in that the maximum value is usually several standard deviations away from the mean and is therefore of a very rare magnitude.

The nature of the rainfall-runoff data analyzed for the event summaries makes it difficult to get a clear perspective of runoff coefficients for several catchments. When the ratio of runoff volume to rainfall volume is computed for each storm, several catchments exhibit a wide variation, and a few values greater than 1.0 may be found. In the latter case, a remark is usually made in the table caption and a reason given, if known . The main problem appears to be the duration of rainfall and runoff sampling. In some cases one or the other was not sampled long enough to obtain the total volume. Since it has only been possible to analyze the data presented in the source material, there is no way to rectify this situation, especially if flow data are missing, although it may be possible to supplement rainfall data with the nearest National Weather Service or airport station records. (This was done in some instances in San Francisco, according to references 34 and 35.) Hence, if the total rainfall duration was not sampled, abnormally high runoff coefficients can result.

High runoff coefficients can also be caused by too small a catchment area, unknown diversions into the catchment during storm events and by the presence of dry-weather flow or base flow. (The latter has not been subtracted during runoff computations.) In several cases, runoff coefficients greater than 1.0 are also computed in documentation accompanying the hydrologic data, with little or no explanation given.

```
                                                 ********************************
                                                 *       SUMMARY OF EVENTS      *
                                                 ********************************
                                                 *       CATCHMENT FILE :  1    *
                                   **************************************************************
                                   * SAN FRANCISCO, CALIFORNIA.   BAKER STREET.        (CA 1 1) *
                                   **************************************************************
                                   * COMBINED SEWERED AREA         CATCHMENT AREA  168.00 ACRES *
                                   **************************************************************


                                     RAINFALL                                          FLOW
                                     --------                                          ----

EVENT  RAIN  DATE(START-END)   DURATION  VOLUME   AVG   PEAK  BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)   (INCH)   RAIN  RAIN  LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                 IN/HR IN/HR  HRS                                                  CFS
-----  ----  ---------------   --------  ------   ----  ----  ----- ---------------   --------   ------   ------   ----  ----


   1    129   69/ 4/ 4 22: 0     9.00    0.300  0.033   0.06    2.50  69/ 4/ 4 22:40    7.83       0.344    1.148   15.74
              69/ 4/ 5  7: 0                                          69/ 4/ 5  6:30

   2    129   69/10/14 23:41     7.62    0.387  0.051   0.06    6.98  69/10/15  3:10    3.50       0.192    0.496   12.54
              69/10/15  7:18                                          69/10/15  6:40

   3    129   69/11/ 5  3:20     4.92    0.525  0.107   0.78    0.67  69/11/ 5  4: 0    4.16       0.464    0.883   81.80
              69/11/ 5  8:15                                          69/11/ 5  8:10
```

*** TABLE X - 4. ***

```
                                            ******************************
                                            *     STATISTICAL SUMMARY    *
                                            ******************************
                                            *      CATCHMENT FILE :  1   *
                                  **************************************************
                                  * SAN FRANCISCO, CALIFORNIA.   BAKER STREET.      (CA 1 1) *
                                  **************************************************
                                  * COMBINED SEWERED AREA        CATCHMENT AREA  168.00 ACRES *
                                  **************************************************

                                      93         95        101        102        103        104        310        340
                                  FLOATBLS   CNDUCTVY     % SUSP     % SUSP     % SUSP     % SUSP        BOD        COD
                                               AT 25C     SOLIDS     SOLIDS     SOLIDS     SOLIDS      5 DAY   HI LEVEL
                                      MG/L   MICROMHO    74U FLT    14U FLT     5U FLT   .45U FLT       MG/L       MG/L
                                  --------   --------   --------   --------   --------   --------   --------   --------
MEAN.............................    2.140    754.000     44.700     32.600     17.100     11.800     22.900    138.000
STANDARD DEVIATION...............    0.916    787.000     27.800      6.040     13.600      1.960      6.020     56.000
COEF. OF VARIATION...............    0.427      1.044      0.622      0.185      0.795      0.166      0.263      0.406
PARAMETER RANGE
          MIN....................    0.100    127.000      1.700      2.000      1.200      4.400      5.000     12.000
          MAX....................   10.500  23000.000    100.000    112.000     58.000     21.700     66.000    626.000
# OF EVENTS......................        3          3          3          3          2          2          3          3
TOTAL FLOW VOLUME(INCH)..........    1.000      1.000      1.000      0.991      0.765      0.770      0.991      1.000
TOTAL MASS LOAD(LBS).............**********  ********** ********** ********** ********** **********    864.000   5240.000
CONCENTRATION(LBS/AC-IN).........**********  ********** ********** ********** ********** **********      5.190     31.200

                                     400        410        530        535        545        552        610        620
                                      PH      T ALK    RESIDUE    RESIDUE    RESIDUE     GREASE      NH3-N      NO3-N
                                              CACO3    TOT NFLT   VOL NFLT   SETTBLE    HEX SOL      TOTAL      TOTAL
                                      SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                  --------   --------   --------   --------   --------   --------   --------   --------
MEAN.............................    7.010     51.500     90.700     53.700      1.750     14.000      1.320      6.950
STANDARD DEVIATION...............    0.161      9.660     14.500      8.820      0.491      9.050      0.343      2.570
COEF. OF VARIATION...............    0.023      0.187      0.160      0.164      0.281      0.647      0.259      0.370
PARAMETER RANGE
          MIN....................    6.600     24.600     20.000     15.000      0.400      0.100      0.200      1.600
          MAX....................    7.400    120.000    340.000    155.000      4.900    110.000      3.800     14.900
# OF EVENTS......................        2          3          3          3          3          3          3          3
TOTAL FLOW VOLUME(INCH)..........    0.808      1.000      1.000      1.000      1.000      1.000      1.000      1.000
TOTAL MASS LOAD(LBS).............**********   1960.000   3450.000   2050.000     66.600    533.000     50.300    265.000
CONCENTRATION(LBS/AC-IN).........**********     11.700     20.500     12.200      0.396      3.170      0.299      1.580

                                   31505      31615      61405      70507
                                  TOT COLI   FEC COLI   TOXICITY    PHOS-T
                                  MPN CONF   MPNECMED   % SURVIV    ORTHO
                                  LN/100ML   LN/100ML   UNDL96HR    MG/L P
                                  --------   --------   --------   --------
MEAN.............................   17.000     15.400     96.500      0.844
STANDARD DEVIATION...............   16.300     15.500      0.000      0.164
COEF. OF VARIATION...............    0.515      1.036      0.000      0.194
PARAMETER RANGE
          MIN....................   13.000     11.900     80.000      0.320
          MAX....................   18.500     17.000    100.000      2.800
# OF EVENTS......................        3          3          1          3
TOTAL FLOW VOLUME(INCH)..........    0.973      0.973      0.360      0.962
TOTAL MASS LOAD(LBS).............   35.900     34.400 **********     30.900
CONCENTRATION(LBS/AC-IN).........   30.800     29.300 **********      0.191



                                  ***  TABLE X -  5. ***
```

```
                                       *******************************
                                       *      SUMMARY OF EVENTS      *
                                       *******************************
                                       *      CATCHMENT FILE :  2    *
                         ***********************************************************
                         * SAN FRANCISCO, CALIFORNIA.   MARIPOSA STREET.    (CA 1 2) *
                         ***********************************************************
                         * COMBINED SEWERED AREA        CATCHMENT AREA  223.00 ACRES *
                         ***********************************************************


                         RAINFALL                                             FLOW
                         --------                                             ----

EVENT RAIN DATE(START-END)   DURATION VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)  COEFF.  FLOW DAYS
                                              IN/HR IN/HR  HRS                                               CFS
----- ---- --------------  -------- ------  ----  ----   ----- --------------    --------  ------  ------  ---- ----

  1   129   69/ 2/27 21:14  8.02    0.329  0.041  0.13   0.98  69/ 2/27 17:50   12.38    0.322   0.976  14.82
            69/ 2/28  5:15                                     69/ 2/28  6:13

  2   129   69/ 3/20 10:30  4.50    0.219  0.049  0.08   3.50  69/ 3/20 11: 0    5.00    0.156   0.711  14.00
            69/ 3/20 15: 0                                     69/ 3/20 16: 0

  3   129   69/ 4/ 2 10:30  0.83    0.067  0.080  0.08   0.83  69/ 4/ 2 11:20    2.17    0.032   0.482   8.55
            69/ 4/ 2 11:20                                     69/ 4/ 2 13:30
```

*** TABLE X - 6. ***

```
                                         ******************************
                                         *     STATISTICAL SUMMARY    *
                                         ******************************
                                         *     CATCHMENT FILE :  2    *
                         **************************************************************
                         * SAN FRANCISCO, CALIFORNIA.   MARIPOSA STREET.     (CA 1 2) *
                         **************************************************************
                         * COMBINED SEWERED AREA        CATCHMENT AREA  223.00 ACRES *
                         **************************************************************

                                      93         95        101        102        103        104        310        340
                                   FLOATBLS   CNDUCTVY    % SUSP     % SUSP     % SUSP     % SUSP      BOD        COD
                                              AT 25C     SOLIDS     SOLIDS     SOLIDS     SOLIDS     5 DAY    HI LEVEL
                                     MG/L    MICROMHO   74U FLT    14U FLT     5U FLT    .45U FLT     MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN...............................   2.220    431.000     20.000     74.100      3.420      4.060     43.200    189.000
STANDARD DEVIATION.................   1.440    164.000      2.320      0.980      2.050      0.276     42.500    122.000
COEF. OF VARIATION.................   0.649      0.381      0.116      0.013      0.600      0.068      0.985      0.645
PARAMETER RANGE
          MIN......................   0.100    138.000      3.400     41.900      0.800      0.600     10.000     16.000
          MAX......................  23.700   3100.000     56.000     87.400     15.800     14.800    312.000  12800.000
# OF EVENTS........................       3          3          2          2          2          2          3          3
TOTAL FLOW VOLUME(INCH)............   0.469      0.510      0.179      0.179      0.169      0.176      0.462      0.510
TOTAL MASS LOAD(LBS)............... **********  **********  **********  **********  **********  **********   1010.000   4860.000
CONCENTRATION(LBS/AC-IN)........... **********  **********  **********  **********  **********  **********      9.780     42.800

                                     400        410        530        535        545        552        610        620
                                     PH        T ALK     RESIDUE    RESIDUE    RESIDUE    GREASE     NH3-N      NO3-N
                                               CACO3     TOT NFLT   VOL NFLT   SETTBLE    HEX SOL     TOTAL      TOTAL
                                     SU        MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN...............................   6.040     82.400    172.000     78.100      4.050     17.800      1.560      7.620
STANDARD DEVIATION.................   0.415     18.000     86.400     35.800      0.431     11.100      1.610      3.540
COEF. OF VARIATION.................   0.069      0.219      0.501      0.458      0.107      0.625      1.035      0.465
PARAMETER RANGE
          MIN......................   1.900     47.000     32.000      4.000      0.100      0.800      0.100      1.800
          MAX......................   9.100    211.000   4950.000   4420.000     15.000   1330.000     10.200     36.400
# OF EVENTS........................       2          2          3          3          2          3          3          3
TOTAL FLOW VOLUME(INCH)............   0.188      0.188      0.510      0.510      0.188      0.510      0.510      0.345
TOTAL MASS LOAD(LBS)............... **********    783.000   4440.000   2010.000     38.500    459.000     40.100    133.000
CONCENTRATION(LBS/AC-IN)........... **********     18.700     39.100     17.700      0.917      4.040      0.353      1.730

                                    31505      31615      61405      70507
                                   TOT COLI   FEC COLI   TOXICITY    PHOS-T
                                   MPN CONF   MPNECMED   % SURVIV    ORTHO
                                   LN/100ML   LN/100ML   UNDL96HR    MG/L P
                                   --------   --------   --------   --------
MEAN...............................  15.600     14.600    100.000      2.270
STANDARD DEVIATION.................  15.900     14.300      0.000      0.515
COEF. OF VARIATION.................   1.303      0.728      0.000      0.227
PARAMETER RANGE
          MIN......................  12.300     10.300    100.000      0.800
          MAX......................  19.900     18.100    100.000     11.400
# OF EVENTS........................       3          3          1          3
TOTAL FLOW VOLUME(INCH)............   0.510      0.510      0.045      0.510
TOTAL MASS LOAD(LBS)...............  34.200     33.200  **********     58.400
CONCENTRATION(LBS/AC-IN)...........  29.400     28.400  **********      0.514
```

*** TABLE X - 7. ***

```
                                          ******************************
                                          *       SUMMARY OF EVENTS    *
                                          ******************************
                                          *       CATCHMENT FILE :  3  *
                                ************************************************
                                * SAN FRANCISCO, CALIFORNIA.   BROTHERHOOD WAY.     (CA 1 3) *
                                ************************************************
                                * COMBINED SEWERED AREA        CATCHMENT AREA  180.00 ACRES *
                                ************************************************


                                     RAINFALL                                     FLOW
                                     --------                                     ----

EVENT  RAIN  DATE(START-END)      DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                    IN/HR IN/HR   HRS                                                  CFS
-----  ----  ---------------      --------  ------  ----  ----    ----- ---------------    --------   ------   ------   ----  ----


  1    129     70/ 1/14  1: 0      2.50     0.270  0.108  0.34     0.33  70/ 1/14  1: 0      4.00      0.203    0.753  43.70
               70/ 1/14  3:30                                            70/ 1/14  5: 0

  2    129     70/ 1/15 18: 0      5.00     0.460  0.092  0.22     1.75  70/ 1/15 18:45      4.00      0.144    0.312  21.20
               70/ 1/15 23: 0                                            70/ 1/15 22:45

  3    129     70/ 1/23  3: 0      2.00     0.020  0.010  0.01     0.83  70/ 1/23  2:40      2.82      0.015    0.741   3.34
               70/ 1/23  5: 0                                            70/ 1/23  5:29
```

*** TABLE X - 8. ***

```
                                          ********************************
                                          *     STATISTICAL SUMMARY      *
                                          ********************************
                                          *      CATCHMENT FILE :  3     *
                              **************************************************************
                              * SAN FRANCISCO, CALIFORNIA.   BROTHERHOOD WAY.     (CA 1 3) *
                              **************************************************************
                              * COMBINED SEWERED AREA         CATCHMENT AREA  180.00 ACRES *
                              **************************************************************

                                        93         95        101        102        103        104        310        340
                                   FLOATBLS   CNDUCTVY     % SUSP     % SUSP     % SUSP     % SUSP        BOD        COD
                                                AT 25C     SOLIDS     SOLIDS     SOLIDS     SOLIDS      5 DAY   HI LEVEL
                                       MG/L   MICROMHO    74U FLT    14U FLT     5U FLT   .45U FLT       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................      37.100     75.400     79.800      8.690      6.100      7.890     45.600    100.000
STANDARD DEVIATION.............     105.000     39.000      0.573      1.510      2.080      0.123     24.700     92.200
COEF. OF VARIATION.............       2.831      0.518      0.007      0.173      0.340      0.016      0.542      0.922
PARAMETER RANGE
         MIN...................       2.100     38.000     57.100      1.800      0.400      2.800      9.000     19.000
         MAX...................    1420.000    443.000    100.000     19.600     12.900     25.000    131.000   1250.000
# OF EVENTS....................           3          3          2          2          2          2          3          3
TOTAL FLOW VOLUME(INCH)........       0.362      0.362      0.347      0.339      0.333      0.333      0.350      0.362
TOTAL MASS LOAD(LBS)...........  **********  ********** ********** ********** ********** **********    652.000   1480.000
CONCENTRATION(LBS/AC-IN).......  **********  ********** ********** ********** ********** **********     10.300     22.700

                                        400        410        530        535        545        552        610        620
                                         PH      T ALK    RESIDUE    RESIDUE    RESIDUE     GREASE      NH3-N      NO3-N
                                                 CACO3    TOT NFLT   VOL NFLT   SETTBLE    HEX SOL      TOTAL      TOTAL
                                         SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................       6.740     15.900    655.000    500.000      1.310     34.400      0.809     17.100
STANDARD DEVIATION.............       0.258      6.520    524.000    457.000      0.844     24.200      0.264      6.060
COEF. OF VARIATION.............       0.038      0.411      0.801      0.914      0.646      0.703      0.327      0.355
PARAMETER RANGE
         MIN...................       6.300      8.800     15.000     10.000      0.100      3.100      0.130      3.800
         MAX...................       7.100     62.400   5540.000   5520.000     10.000    423.000      6.100     55.500
# OF EVENTS....................           3          3          3          3          3          3          3          3
TOTAL FLOW VOLUME(INCH)........       0.362      0.362      0.362      0.362      0.362      0.362      0.362      0.362
TOTAL MASS LOAD(LBS)...........  **********    234.000   9670.000   7390.000     19.300    507.000     11.900    252.000
CONCENTRATION(LBS/AC-IN).......  **********      3.600    148.000    113.000      0.296      7.790      0.183      3.870

                                      31505      31615      61405      70507
                                   TOT COLI   FEC COLI   TOXICITY     PHOS-T
                                   MPN CONF   MPNECMED   % SURVIV      ORTHO
                                   LN/100ML   LN/100ML   UNDL96HR     MG/L P
                                   --------   --------   --------   --------
MEAN...........................      15.300     13.600     90.800      0.815
STANDARD DEVIATION.............      14.300     13.900      0.000      0.179
COEF. OF VARIATION.............       0.376      1.422      0.000      0.220
PARAMETER RANGE
         MIN...................      12.800     11.400     90.000      0.200
         MAX...................      16.200     16.200    100.000      2.460
# OF EVENTS....................           3          3          1          3
TOTAL FLOW VOLUME(INCH)........       0.362      0.362      0.144      0.354
TOTAL MASS LOAD(LBS)...........      33.300     31.600 **********     11.800
CONCENTRATION(LBS/AC-IN).......      29.200     27.400 **********      0.185
```

*** TABLE X - 9. ***

```
                                              ****************************
                                              *     SUMMARY OF EVENTS    *
                                              ****************************
                                              *     CATCHMENT FILE :  4  *
                                   ***************************************************
                                   * SAN FRANCISCO, CALIFORNIA.  VICENTE STREET NORTH (CA 1 4) *
                                   ***************************************************
                                   *   STORM SEWERED AREA       CATCHMENT AREA   16.00 ACRES *
                                   ***************************************************


                                        RAINFALL                                            FLOW
                                        --------                                            ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)    DURATION   VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)  COEFF.  FLOW  DAYS
                                                   IN/HR IN/HR   HRS                                                 CFS
-----  ----  ---------------     --------  ------  ----- -----   ----- ---------------    --------   ------  ------  ----  ----


  1    129    70/ 2/16 16:10      4.83     0.393  0.081  0.13     1.67  70/ 2/16 16:20     5.00      0.478   1.216   4.77
              70/ 2/16 21: 0                                            70/ 2/16 21:20
```

*** TABLE X - 10. ***

```
                                                   ********************************
                                                   *      STATISTICAL SUMMARY     *
                                                   ********************************
                                                   *       CATCHMENT FILE :  4    *
                                      ***************************************************
                                      * SAN FRANCISCO, CALIFORNIA.   VICENTE STREET NORTH (CA 1 4) *
                                      ***************************************************
                                      *    STORM SEWERED AREA         CATCHMENT AREA   16.00 ACRES *
                                      ***************************************************

                                           93          95         101         102         103         104         310         340
                                      FLOATBLS    CNDUCTVY      % SUSP      % SUSP      % SUSP      % SUSP         BOD         COD
                                                    AT 25C      SOLIDS      SOLIDS      SOLIDS      SOLIDS       5 DAY    HI LEVEL
                                          MG/L    MICROMHO    74U FLT     14U FLT      5U FLT    .45U FLT        MG/L        MG/L
                                      --------    --------    --------    --------    --------    --------    --------    --------
MEAN.............................        2.720     177.000      78.700      11.300       6.480       3.560       9.780      66.200
STANDARD DEVIATION...............        0.000       0.000       0.000       0.000       0.000       0.000       0.020       0.153
COEF. OF VARIATION...............        0.000       0.000       0.000       0.000       0.000       0.000       0.002       0.002
PARAMETER RANGE
          MIN....................        1.000     113.000      40.600       4.300       2.700       0.600       3.000      27.000
          MAX....................        6.300     600.000      89.200      29.800      18.900      21.600      98.000     428.000
# OF EVENTS......................            1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH)..........        0.478       0.478       0.478       0.478       0.478       0.478       0.478       0.478
TOTAL MASS LOAD(LBS).............   **********  **********  **********  **********  **********  **********      17.000     115.000
CONCENTRATION(LBS/AC-IN).........   **********  **********  **********  **********  **********  **********       2.220      15.000

                                          400         410         530         535         545         552         610         620
                                            PH       T ALK     RESIDUE     RESIDUE     RESIDUE      GREASE       NH3-N       NO3-N
                                                     CACO3    TOT NFLT    VOL NFLT    SETTBLE      HEX SOL       TOTAL       TOTAL
                                            SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                      --------    --------    --------    --------    --------    --------    --------    --------
MEAN.............................        6.560      10.300      48.300      18.700       0.568       7.460       0.209       1.300
STANDARD DEVIATION...............        0.000       0.025       0.113       0.038       0.001       0.016       0.000       0.003
COEF. OF VARIATION...............        0.000       0.002       0.002       0.002       0.002       0.002       0.002       0.002
PARAMETER RANGE
          MIN....................        6.400       6.300      20.000       7.000       0.350       4.500       0.120       0.610
          MAX....................        6.700      42.000     210.000      77.000       5.700      17.900       1.360       8.500
# OF EVENTS......................            1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH)..........        0.478       0.478       0.478       0.478       0.280       0.478       0.478       0.478
TOTAL MASS LOAD(LBS).............   **********      17.800      83.700      32.400       0.577      12.900       0.363       2.250
CONCENTRATION(LBS/AC-IN).........   **********       2.330      10.900       4.240       0.129       1.690       0.047       0.294

                                        31505       31615       70507       80099
                                      TOT COLI    FEC COLI      PHOS-T    RES-SETL
                                      MPN CONF    MPNECMED      ORTHO       30 MIN
                                      LN/100ML    LN/100ML    MG/L P        ML/L
                                      --------    --------    --------    --------
MEAN.............................       13.200      11.600       0.098       2.280
STANDARD DEVIATION...............        0.000       0.000       0.000       0.004
COEF. OF VARIATION...............        0.000       0.000       0.002       0.002
PARAMETER RANGE
          MIN....................       11.400       9.900       0.080       1.000
          MAX....................       15.300      14.600       0.770       3.500
# OF EVENTS......................            1           1           1           1
TOTAL FLOW VOLUME(INCH)..........        0.478       0.478       0.478       0.095
TOTAL MASS LOAD(LBS).............       29.100      27.500       0.170       0.783
CONCENTRATION(LBS/AC-IN).........       27.100      25.400       0.022       0.517



                                                        ***  TABLE X - 11. ***
```

```
                              ***************************************
                              *        SUMMARY OF EVENTS            *
                              ***************************************
                              *        CATCHMENT FILE :  5          *
                   ***************************************************************
                   * SAN FRANCISCO, CALIFORNIA.   VICENTE STREET SOUTH (CA 1 5) *
                   ***************************************************************
                   *   STORM SEWERED AREA          CATCHMENT AREA   21.00 ACRES *
                   ***************************************************************


                       RAINFALL                                                        FLOW
                       --------                                                        ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK     BASIN DATE(START-END)     DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN     LAG   YR,MON,D,HR,MIN     (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR    HRS                                                    CFS
-----  ----  ---------------     --------  ------  -----  -----    ----- ---------------     --------   ------   ------   ----  ----

  1    129     70/ 2/16 16:10      4.83    0.393   0.081  0.13     1.75   70/ 2/16 16:25      5.00      0.292    0.741    3.44
               70/ 2/16 21: 0                                             70/ 2/16 21:25
```

*** TABLE X - 12. ***

```
                                             ********************************
                                             *     STATISTICAL SUMMARY      *
                                             ********************************
                                             *      CATCHMENT FILE :  5     *
                                   ************************************************************
                                   * SAN FRANCISCO, CALIFORNIA.   VICENTE STREET SOUTH (CA 1 5) *
                                   ************************************************************
                                   *    STORM SEWERED AREA        CATCHMENT AREA   21.00 ACRES *
                                   ************************************************************

                                          93           95          101          102          103          104          310          340
                                    FLOATBLS     CNDUCTVY       % SUSP       % SUSP       % SUSP       % SUSP          BOD          COD
                                                   AT 25C       SOLIDS       SOLIDS       SOLIDS       SOLIDS        5 DAY     HI LEVEL
                                        MG/L     MICROMHO      74U FLT      14U FLT       5U FLT     .45U FLT         MG/L         MG/L
                                    --------     --------     --------     --------     --------     --------     --------     --------
MEAN...............................    4.010      255.000       86.200        7.690        4.840        4.480        4.530       61.200
STANDARD DEVIATION.................    0.000        0.000        0.000        0.000        0.000        0.000        0.010        0.149
COEF. OF VARIATION.................    0.000        0.000        0.000        0.000        0.000        0.000        0.002        0.002
PARAMETER RANGE
         MIN.......................    1.200      144.000       73.600        1.600        0.600        1.800        1.000       31.000
         MAX.......................    7.400      600.000       98.000       12.500       21.100        6.200       20.000      230.000
# OF EVENTS........................        1            1            1            1            1            1            1            1
TOTAL FLOW VOLUME(INCH)............    0.292        0.292        0.292        0.292        0.292        0.273        0.292        0.292
TOTAL MASS LOAD(LBS)............... **********   **********   **********   **********   **********   **********        6.280       84.900
CONCENTRATION(LBS/AC-IN)........... **********   **********   **********   **********   **********   **********        1.030       13.900

                                         400          410          530          535          545          552          610          620
                                          PH        T ALK      RESIDUE      RESIDUE      RESIDUE       GREASE        NH3-N        NO3-N
                                                    CACO3     TOT NFLT     VOL NFLT     SETTBLE       HEX SOL        TOTAL        TOTAL
                                          SU         MG/L         MG/L         MG/L         MG/L         MG/L         MG/L         MG/L
                                    --------     --------     --------     --------     --------     --------     --------     --------
MEAN...............................    6.310       11.800       45.800       17.000        0.367       12.500        0.296        1.230
STANDARD DEVIATION.................    0.000        0.026        0.088        0.038        0.001        0.030        0.001        0.002
COEF. OF VARIATION.................    0.000        0.002        0.002        0.002        0.002        0.002        0.002        0.002
PARAMETER RANGE
         MIN.......................    6.100        9.000       11.000        5.000        0.040        6.600        0.010        0.560
         MAX.......................    6.800       42.400      210.000       77.000        5.250       21.500        4.840        8.130
# OF EVENTS........................        1            1            1            1            1            1            1            1
TOTAL FLOW VOLUME(INCH)............    0.292        0.292        0.292        0.292        0.292        0.273        0.292        0.292
TOTAL MASS LOAD(LBS)............... **********       16.400       63.600       23.700        0.509       16.200        0.410        1.710
CONCENTRATION(LBS/AC-IN)........... **********        2.680       10.400        3.860        0.083        2.830        0.067        0.279

                                       31505        31615        70507
                                    TOT COLI     FEC COLI       PHOS-T
                                    MPN CONF     MPNECMED        ORTHO
                                    LN/100ML     LN/100ML     MG/L P
                                    --------     --------     --------
MEAN...............................   12.200       10.600        0.087
STANDARD DEVIATION.................    0.000        0.000        0.000
COEF. OF VARIATION.................    0.000        0.000        0.002
PARAMETER RANGE
         MIN.......................   10.600        9.210        0.020
         MAX.......................   14.600       13.700        1.250
# OF EVENTS........................        1            1            1
TOTAL FLOW VOLUME(INCH)............    0.292        0.292        0.292
TOTAL MASS LOAD(LBS)...............   27.900       26.300        0.121
CONCENTRATION(LBS/AC-IN)...........   26.000       24.500        0.020
```

*** TABLE X - 13. ***

```
                              ********************************
                              *       SUMMARY OF EVENTS      *
                              ********************************
                              *      CATCHMENT FILE :  6     *
                  ******************************************************
                  * SAN FRANCISCO, CALIFORNIA.   SELBY STREET.   (CA 1 6) *
                  ******************************************************
                  * COMBINED SEWERED AREA      CATCHMENT AREA 3400.00 ACRES *
                  ******************************************************


                          RAINFALL                                            FLOW
                          --------                                            ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                               CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------    --------  ------  ------  ----  ----

  1    129     66/11/ 6  8:55     3.75    0.919  0.245  0.62    2.82  66/11/ 6 10:34     4.83     0.162    0.176 465.00
               66/11/ 6 12:40                                        66/11/ 6 15:24

  2    129     66/11/14 20: 0     4.00    0.175  0.044  0.25    1.91  66/11/14 21:55     3.17     0.071    0.403 167.00
               66/11/14 24: 0                                        66/11/15  1: 5

  3    129     66/11/15  5:55     5.59    0.239  0.043  0.25    6.42  66/11/15  6:35     5.75     0.205    0.859 290.00
               66/11/15 11:30                                        66/11/15 12:20

  4    129     67/ 1/20  4:30    42.50    4.595  0.106  0.41   22.50  67/ 1/20  7:10    42.33     3.170    0.690 460.00
               67/ 1/21 23: 0                                        67/ 1/22  1:30

  5    129     67/ 1/23 20:15     8.75    1.107  0.127  0.27    5.33  67/ 1/23 21:25     6.08     0.519    0.469 440.00
               67/ 1/24  5: 0                                        67/ 1/24  3:30

  6    129     67/ 2/24 20: 0     4.00    0.168  0.042  0.20    0.83  67/ 2/24 20:50     1.17     0.030    0.181 245.00
               67/ 2/24 24: 0                                        67/ 2/24 22: 0

  7    129     67/ 3/10 20:15     5.50    1.267  0.230  0.83    3.42  67/ 3/10 21:50     2.83     0.287    0.227 720.00
               67/ 3/11  1:45                                        67/ 3/11  0:40

  8    129     67/ 3/15 18: 0     7.58    1.168  0.154  0.82    5.65  67/ 3/15 22:25     3.15     0.261    0.223 530.00
               67/ 3/16  1:35                                        67/ 3/16  1:34
```

*** TABLE X - 14. ***

```
                                                      ***********************************
                                                      *     STATISTICAL SUMMARY         *
                                                      ***********************************
                                                      *     CATCHMENT FILE :  6         *
                                        ***********************************************************
                                        * SAN FRANCISCO, CALIFORNIA.   SELBY STREET.      (CA 1 6) *
                                        ***********************************************************
                                        * COMBINED SEWERED AREA        CATCHMENT AREA 3400.00 ACRES *
                                        ***********************************************************

                                              88          89          93          95         310         340         410         530
                                            BOD5         COD    FLOATBLS    CNDUCTVY         BOD         COD       T ALK     RESIDUE
                                         SETTLED     SETTLED                  AT 25C       5 DAY    HI LEVEL       CACO3    TOT NFLT
                                            MG/L        MG/L        MG/L    MICROMHO        MG/L        MG/L        MG/L        MG/L
                                       ---------   ---------   ---------   ---------   ---------   ---------   ---------   ---------
MEAN................................      46.800      66.300       4.480     174.000      38.100     148.000      34.400     215.000
STANDARD DEVIATION..................       0.000      46.800       3.300      42.300      30.100     101.000       7.660     146.000
COEF. OF VARIATION..................       0.000       0.707       0.737       0.244       0.789       0.683       0.223       0.678
PARAMETER RANGE
          MIN.......................      13.000      16.300       0.500      67.000       2.000      33.000      13.800      24.000
          MAX.......................      86.000    2210.000      44.600     714.000     480.000    1760.000     855.000    1260.000
# OF EVENTS.........................           1           2           7           5           8           8           8           8
TOTAL FLOW VOLUME(INCH).............       0.162       2.743       4.430       0.986       4.706       4.706       4.706       4.706
TOTAL MASS LOAD(LBS)................  **********  **********  **********  **********  138000.000  537000.000  125000.000  781000.000
CONCENTRATION(LBS/AC-IN)............  **********  **********  **********  **********       8.630      33.600       7.790      48.800

                                             535         544         546         552         610         625         650         916
                                         RESIDUE     RESIDUE     RESIDUE      GREASE       NH3-N    TOT KJEL       T PO4     CALCIUM
                                        VOL NFLT     VOL SET    SETTLBLE     HEX SOL       TOTAL           N         PO4      CA-TOT
                                            MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                       ---------   ---------   ---------   ---------   ---------   ---------   ---------   ---------
MEAN................................      67.800      36.600     145.000      11.900       1.760       3.830       0.795       9.820
STANDARD DEVIATION..................      64.900       7.720      52.200      11.600       1.970       3.660       0.580       1.720
COEF. OF VARIATION..................       0.956       0.211       0.360       0.979       1.122       0.954       0.730       0.175
PARAMETER RANGE
          MIN.......................       4.000       5.000      27.000       0.400       0.350       0.350       0.220       4.000
          MAX.......................     886.000     442.000    1070.000     122.000      19.600      54.000       8.550      46.400
# OF EVENTS.........................           7           2           3           8           7           8           8           8
TOTAL FLOW VOLUME(INCH).............       4.445       3.689       3.712       4.706       2.797       4.671       4.706       4.668
TOTAL MASS LOAD(LBS)................  232000.000  104000.000  415000.000   43100.000    3790.000   13800.000    2880.000   35300.000
CONCENTRATION(LBS/AC-IN)............      15.400       8.300      32.900       2.690       0.398       0.869       0.180       2.230

                                             927         929         937         940         945       31505       31615       80099
                                         MGNSIUM      SODIUM     PTSSIUM    CHLORIDE     SULFATE    TOT COLI    FEC COLI    RES-SETL
                                          MG.TOT      NA.TOT       K.TOT          CL         SO4    MPN CONF    MPNECMED      30 MIN
                                            MG/L        MG/L        MG/L        MG/L        MG/L    LN/100ML    LN/100ML        ML/L
                                       ---------   ---------   ---------   ---------   ---------   ---------   ---------   ---------
MEAN................................       2.770      10.300       2.030      12.000      21.800      16.300      14.100       0.759
STANDARD DEVIATION..................       0.648       3.160       0.581       3.190       3.640      16.100      14.700       1.100
COEF. OF VARIATION..................       0.234       0.305       0.286       0.266       0.167       0.810       1.750       1.446
PARAMETER RANGE
          MIN.......................       0.490       5.000       0.800       4.200      10.000      12.300      11.000       0.100
          MAX.......................      19.900      84.500      12.300     129.000      92.000      18.700      17.900      14.500
# OF EVENTS.........................           8           8           8           7           8           4           4           7
TOTAL FLOW VOLUME(INCH).............       4.668       4.706       4.706       4.544       4.258       1.097       1.097       4.430
TOTAL MASS LOAD(LBS)................    9970.000   37500.000    7370.000   42100.000   71400.000      38.400      36.200    2590.000
CONCENTRATION(LBS/AC-IN)............       0.628       2.350       0.461       2.720       4.930      30.100      28.000       0.172
```

*** TABLE X - 15. ***

```
                              *******************************
                              *      SUMMARY OF EVENTS      *
                              *******************************
                              *      CATCHMENT FILE :  7    *
                    *************************************************
                    * SAN FRANCISCO, CALIFORNIA.   LAGUNA STREET.        (CA 1 7) *
                    *************************************************
                    * COMBINED SEWERED AREA        CATCHMENT AREA  375.00 ACRES *
                    *************************************************


                        RAINFALL                                          FLOW
                        --------                                          ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK   DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW   DAYS
                                                   IN/HR  IN/HR   HRS                                                   CFS
-----  ----  ---------------     --------  ------  -----  -----   ----- ---------------    --------   ------   ------   ----   ----


  1    129     67/ 3/10 20:30     3.50     0.984   0.281  3.06    3.00   67/ 3/10 20:45     3.25      0.194    0.197   80.60
               67/ 3/10 24: 0                                            67/ 3/10 24: 0

  2    129     67/ 3/15 19:55     4.08     0.927   0.227  0.78    2.58   67/ 3/15 20:20     3.67      0.347    0.374  108.00
               67/ 3/15 24: 0                                            67/ 3/15 24: 0
```

*** TABLE X - 16. ***

```
                                                ******************************
                                                *     STATISTICAL SUMMARY    *
                                                ******************************
                                                *     CATCHMENT FILE :  7    *
                                    **************************************************************
                                    * SAN FRANCISCO, CALIFORNIA.   LAGUNA STREET.       (CA 1 7) *
                                    **************************************************************
                                    * COMBINED SEVERED AREA        CATCHMENT AREA  375.00 ACRES *
                                    **************************************************************

                                          93          95         310         340         410         530         535         552
                                     FLOATBLS    CNDUCTVY       BOD         COD       T ALK     RESIDUE     RESIDUE      GREASE
                                                  AT 25C       5 DAY     HI LEVEL     CACO3    TOT NFLT    VOL NFLT    HEX SOL
                                        MG/L    MICROMHO       MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                   ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
MEAN..............................       2.740     115.000      46.300     145.000      24.500     211.000      98.400      17.700
STANDARD DEVIATION................       2.050      11.200       8.800      33.100       3.620     101.000      37.600       7.930
COEF. OF VARIATION................       0.749       0.097       0.190       0.227       0.148       0.479       0.382       0.448
PARAMETER RANGE
          MIN.....................       0.400      62.000       4.000      41.000      13.800      53.000      28.000       2.200
          MAX.....................       7.800     338.000     252.000     458.000      82.000     483.000     264.000      63.400
# OF EVENTS.......................           2           2           2           2           2           2           2           2
TOTAL FLOW VOLUME(INCH)...........       0.541       0.541       0.541       0.541       0.541       0.541       0.541       0.541
TOTAL MASS LOAD(LBS)..............  **********  **********    2130.000    6690.000    1130.000    9690.000    4520.000     814.000
CONCENTRATION(LBS/AC-IN)..........  **********  **********      10.500      33.000       5.560      47.800      22.300       4.010

                                         610         625         650         916         927         929         937         940
                                       NH3-N     TOT KJEL      T PO4     CALCIUM     MGNSIUM      SODIUM     PTSSIUM    CHLORIDE
                                       TOTAL         N          PO4       CA-TOT      MG.TOT      NA.TOT      K.TOT         CL
                                        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                   ----------  ----------  ----------  ----------  ----------  ----------  ----------  ----------
MEAN..............................       2.390       4.690       0.881       6.150       2.140       8.060       1.750       8.020
STANDARD DEVIATION................       0.762       0.917       0.132       0.865       0.085       0.555       0.074       0.745
COEF. OF VARIATION................       0.319       0.196       0.150       0.141       0.040       0.069       0.042       0.093
PARAMETER RANGE
          MIN.....................       0.350       1.050       0.240       4.000       0.700       2.000       1.050       3.000
          MAX.....................      23.800      19.900       3.200      15.200       5.800      29.500       6.700      32.000
# OF EVENTS.......................           2           2           2           2           2           2           2           2
TOTAL FLOW VOLUME(INCH)...........       0.420       0.469       0.541       0.541       0.541       0.541       0.541       0.541
TOTAL MASS LOAD(LBS)..............      85.300     187.000      40.500     283.000      98.300     370.000      80.500     369.000
CONCENTRATION(LBS/AC-IN)..........       0.541       1.060       0.200       1.390       0.485       1.830       0.397       1.820

                                         945       31505       31615       80099
                                      SULFATE    TOT COLI    FEC COLI    RES-SETL
                                         SO4     MPN CONF    MPNECMED     30 MIN
                                        MG/L     LN/100ML    LN/100ML       ML/L
                                   ----------  ----------  ----------  ----------
MEAN..............................      11.100      16.500      14.300       0.888
STANDARD DEVIATION................       1.170      15.600      12.300       0.167
COEF. OF VARIATION................       0.105       0.392       0.145       0.188
PARAMETER RANGE
          MIN.....................       5.000      12.300      12.300       0.200
          MAX.....................      29.000      18.100      16.400       4.000
# OF EVENTS.......................           2           2           2           2
TOTAL FLOW VOLUME(INCH)...........       0.541       0.541       0.541       0.314
TOTAL MASS LOAD(LBS)..............     512.000      35.600      33.400      23.700
CONCENTRATION(LBS/AC-IN)..........       2.530      30.300      28.100       0.201
```

*** TABLE X - 17. ***

```
                    ******************************
                    *      SUMMARY OF EVENTS     *
                    ******************************
                    *     CATCHMENT FILE :  8    *
*********************************************************
* LOS ANGELES, CALIFORNIA.     ECHO PARK.        (CA 2 1) *
*********************************************************
*    STORM SEWERED AREA         CATCHMENT AREA  252.00 ACRES *
*********************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	58/ 2/ 3 10: 2 58/ 2/ 3 12: 2	2.00	0.660	0.330	1.80	1.50	58/ 2/ 3 10:20 58/ 2/ 3 13: 0	2.67	0.289	0.438	275.20	
2	129	58/ 2/ 4 1: 2 58/ 2/ 4 8:10	7.13	1.100	0.154	1.50	6.80	58/ 2/ 4 1: 5 58/ 2/ 4 8:30	7.42	0.613	0.557	260.00	
3	129	58/ 2/19 1:22 58/ 2/19 10:46	9.40	3.430	0.365	2.40	9.05	58/ 2/19 1:35 58/ 2/19 11:25	9.83	1.431	0.417	295.20	
4	129	62/ 2/12 4: 2 62/ 2/12 5:54	1.87	0.680	0.364	1.35	0.88	62/ 2/12 4: 5 62/ 2/12 7: 0	2.92	0.430	0.632	234.90	
5	129	62/ 2/19 3:38 62/ 2/19 9:54	6.27	1.540	0.246	1.20	2.07	62/ 2/19 4:20 62/ 2/19 10:30	6.17	0.694	0.450	204.40	
6	129	63/ 2/ 9 11:22 63/ 2/ 9 20: 6	8.73	2.380	0.273	1.05	8.55	63/ 2/ 9 12:20 63/ 2/ 9 20:30	8.17	0.812	0.341	169.90	
7	129	64/ 1/21 0:14 64/ 1/21 5: 2	4.80	1.060	0.221	1.05	4.27	64/ 1/21 0:20 64/ 1/21 6: 0	5.67	0.433	0.408	178.00	
8	129	64/ 1/22 0:30 64/ 1/22 3:50	3.33	0.540	0.162	0.90	2.25	64/ 1/22 0:40 64/ 1/22 4: 0	3.33	0.264	0.488	186.90	
9	129	65/ 4/ 8 6:40 65/ 4/ 8 11:24	4.73	1.662	0.351	16.65	3.92	65/ 4/ 8 6:55 65/ 4/ 8 11:25	4.50	0.436	0.262	181.50	
10	129	65/ 4/ 9 11:50 65/ 4/ 9 19:38	7.80	1.540	0.197	1.35	6.67	65/ 4/ 9 12: 5 65/ 4/ 9 21: 0	8.92	0.760	0.494	199.20	
11	129	67/11/19 0:18 67/11/19 3:54	3.60	0.878	0.244	1.50	2.20	67/11/19 1: 5 67/11/19 4:40	3.58	0.493	0.561	260.00	
12	129	67/11/20 12:26 67/11/20 13:10	0.73	0.488	0.665	2.10	0.52	67/11/20 12:40 67/11/20 14: 0	1.34	0.309	0.634	284.20	
13	129	69/ 1/26 10:18 69/ 1/26 13:50	3.53	0.850	0.241	1.20	0.83	69/ 1/26 10:40 69/ 1/26 14:50	4.17	0.569	0.669	186.90	
14	129	69/ 2/ 6 0:34 69/ 2/ 6 5: 6	4.53	1.010	0.223	1.05	3.77	69/ 2/ 6 0:40 69/ 2/ 6 5:15	4.58	0.653	0.647	238.10	
15	129	69/ 2/15 12:38 69/ 2/15 18:34	5.93	1.000	0.169	1.35	4.95	69/ 2/15 12:45 69/ 2/15 20: 0	7.25	0.505	0.505	195.70	
16	129	69/ 2/25 2:26 69/ 2/25 9:26	7.00	1.330	0.190	0.75	2.65	69/ 2/25 2:28 69/ 2/25 10: 0	7.53	0.961	0.722	145.70	
17	129	70/ 3/ 4 16: 2 70/ 3/ 4 22:46	6.73	1.350	0.201	1.05	5.63	70/ 3/ 4 16: 3 70/ 3/ 4 24: 0	7.95	0.594	0.440	146.60	
18	129	70/12/21 2: 0 70/12/21 7:24	5.40	1.351	0.250	1.05	5.00	70/12/21 2:20 70/12/21 8: 0	5.67	0.252	0.187	115.80	

*** TABLE X - 18. ***

```
******************************
*      SUMMARY OF EVENTS     *
******************************
*      CATCHMENT FILE :  9   *
**************************************************
* DENVER, COLORADO.   BIG DRY CREEK.       (CO 1 1) *
**************************************************
*    STORM SEVERED AREA       CATCHMENT AREA  606.00 ACRES *
**************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	76/ 5/30 13:25 76/ 5/30 14: 0	0.58	0.300	0.514	0.84	0.58	76/ 5/30 13:25 76/ 5/30 15: 0	1.58	0.053	0.176	63.00	
	122	76/ 5/30 13:25 76/ 5/30 14: 5	0.67	0.310	0.465	0.72	0.58				0.171		
	121	76/ 5/30 13:25 76/ 5/30 13:55	0.50	0.180	0.360	0.60	0.58				0.294		
2	123	76/ 7/25 17:30 76/ 7/25 17:42	0.20	0.140	0.703	1.28	0.46	76/ 7/25 17:32 76/ 7/25 20:26	2.90	0.052	0.371	69.00	
	122	76/ 7/25 17:30 76/ 7/25 17:48	0.30	0.280	0.943	2.24	0.46				0.185		
	121	76/ 7/25 17:32 76/ 7/25 18: 0	0.47	0.230	0.491	1.60	0.43				0.226		
3	123	77/ 4/15 4:20 77/ 4/15 11:25	7.08	0.750	0.106	0.24	4.92	77/ 4/15 4:20 77/ 4/15 12: 0	7.67	0.170	0.226	33.00	
	122	77/ 4/15 4:20 77/ 4/15 11: 5	6.75	0.800	0.119	0.24	4.92				0.212		
	121	77/ 4/15 4:20 77/ 4/15 11:30	7.17	0.720	0.100	0.24	4.92				0.236		
4	123	77/ 4/18 14:45 77/ 4/18 15:35	0.83	0.060	0.072	0.12	0.58	77/ 4/18 14:50 77/ 4/18 16:25	1.58	0.005	0.091	3.80	
	122	77/ 4/18 14:45 77/ 4/18 16:20	1.58	0.090	0.057	0.24	0.58				0.061		
	121	77/ 4/18 14:55 77/ 4/18 16:15	1.33	0.050	0.037	0.12	0.42				0.110		
5	123	77/ 4/19 14:35 77/ 4/19 22:20	7.75	0.560	0.072	0.24	3.17	77/ 4/19 15: 0 77/ 4/19 23:30	8.50	0.077	0.137	14.00	
	122	77/ 4/19 14:35 77/ 4/19 22:15	7.67	0.530	0.069	0.24	3.17				0.145		
	121	77/ 4/19 14:35 77/ 4/19 22:25	7.83	0.470	0.060	0.24	3.17				0.163		
6	123	77/ 6/11 14:55 77/ 6/11 15:50	0.92	0.390	0.425	1.08	0.75	77/ 6/11 14:55 77/ 6/11 17:15	2.33	0.118	0.302	96.00	
	122	77/ 6/11 14:55 77/ 6/11 15:50	0.92	0.440	0.480	1.20	0.75				0.268		

*** TABLE X - 19. ***

```
                                                  ********************************
                                                  *      STATISTICAL SUMMARY     *
                                                  ********************************
                                                  *      CATCHMENT FILE : 9      *
                                   **************************************************************
                                   * DENVER, COLORADO.   BIG DRY CREEK.                (CO 1 1) *
                                   **************************************************************
                                   *    STORM SEWERED AREA         CATCHMENT AREA  606.00 ACRES *
                                   **************************************************************

                                   95         310         403         410         440         530         535         600
                              CNDUCTVY       BOD         LAB       T ALK    HCO3 ION     RESIDUE     RESIDUE     TOTAL N
                               AT 25C       5 DAY         PH       CACO3       HCO3     TOT NFLT    VOL NFLT        N
                              MICROMHO       MG/L         SU        MG/L        MG/L        MG/L        MG/L        MG/L
                              --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................     108.000      34.900       7.040      27.300      33.300     541.000     136.000       3.240
STANDARD DEVIATION..............      18.800       2.000       0.353       0.945       1.100     144.000      34.000       0.981
COEF. OF VARIATION..............       0.175       0.058       0.050       0.035       0.033       0.267       0.250       0.303
PARAMETER RANGE
          MIN...................      78.000      23.200       6.500      19.000      23.000      44.000       9.000       1.100
          MAX...................     320.000      50.000       7.700      55.000      67.000    1340.000     268.000      10.000
# OF EVENTS.....................           4           2           4           2           2           4           4           4
TOTAL FLOW VOLUME(INCH).........       0.209       0.090       0.209       0.117       0.117       0.209       0.209       0.209
TOTAL MASS LOAD(LBS)............  **********     432.000  **********     438.000     534.000   15500.000    3910.000      92.900
CONCENTRATION(LBS/AC-IN)........  **********       7.900  **********       6.190       7.540     123.000      30.900       0.733

                                  605         610         615         620         625         630         666         681
                               ORG N       NH3-N       NO2-N       NO3-N     TOT KJEL     NO2&NO3    PHOS-DIS     D ORG C
                                 N         TOTAL       TOTAL       TOTAL        N         N-TOTAL                     C
                                MG/L        MG/L        MG/L        MG/L        MG/L        MG/L      MG/L P        MG/L
                              --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................       1.870       0.563       0.047       0.678       2.440       0.712       0.251      16.500
STANDARD DEVIATION..............       0.677       0.186       0.008       0.177       0.763       0.187       0.041       3.170
COEF. OF VARIATION..............       0.361       0.331       0.166       G.261       0.313       0.262       0.162       0.193
PARAMETER RANGE
          MIN...................       0.360       0.210       0.010       0.240       0.800       0.250       0.060       4.700
          MAX...................       8.900       1.200       0.220       1.900       9.500       2.000       0.420      90.000
# OF EVENTS.....................           4           4           4           4           4           4           4           3
TOTAL FLOW VOLUME(INCH).........       0.209       0.209       0.209       0.209       0.209       0.209       0.209       0.152
TOTAL MASS LOAD(LBS)............      53.800      16.100       1.350      19.500      70.100      20.400       7.190     344.000
CONCENTRATION(LBS/AC-IN)........       0.425       0.127       0.011       0.154       0.553       0.161       0.057       3.740

                                  689         900         902         915         925         930         931         935
                              S ORG C     TOT HARD     NC HARD     CALCIUM     MGNSIUM      SODIUM      SODIUM     PTSSIUM
                                 C         CACO3       CACO3      CA,DISS      CACO3       NA,DISS    ADSBTION     K,DISS
                                MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        RATIO       MG/L
                              --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................      21.400      33.300       7.890      11.800       1.000       4.830       0.323       3.110
STANDARD DEVIATION..............       0.678       4.640       3.360       1.180       0.209       1.750       0.077       0.187
COEF. OF VARIATION..............       0.032       0.139       0.426       0.100       0.209       0.363       0.238       0.060
PARAMETER RANGE
          MIN...................       7.500      25.000       1.000       8.100       0.700       0.300       0.080       2.400
          MAX...................      25.000      92.000      90.000      31.000       3.600      24.000       1.100       5.500
# OF EVENTS.....................           2           2           2           4           2           4           2           2
TOTAL FLOW VOLUME(INCH).........       0.117       0.117       0.117       0.209       0.117       0.209       0.117       0.117
TOTAL MASS LOAD(LBS)............     343.000     535.000     127.000     338.000      16.100     139.000       5.190      50.000
CONCENTRATION(LBS/AC-IN)........       4.840       7.560       1.790       2.670       0.227       1.090       0.073       0.706
```

*** TABLE X - 20. ***

```
                                       ********************************
                                       *     STATISTICAL SUMMARY      *
                                       ********************************
                                       *      CATCHMENT FILE :  9     *
                        **************************************************************
                        * DENVER, COLORADO.   BIG DRY CREEK.               (CO 1 1) *
                        **************************************************************
                        *    STORM SEWERED AREA        CATCHMENT AREA  606.00 ACRES *
                        **************************************************************

                                    940         946         950         955        1002        1042        1051        1056
                                 CHLORIDE     SULFATE    FLUORIDE     SILICA     ARSENIC      COPPER       LEAD     MANGNESE
                                    CL       SO4-DISS     F,DISS    DISOLVED      AS.TOT      CU.TOT      PB.TOT     MN,DISS
                                   MG/L        MG/L        MG/L        MG/L        UG/L        UG/L        UG/L        UG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................    4.810      12.400       0.118       1.760       6.840      43.500     475.000      14.400
STANDARD DEVIATION..............    1.740       3.650       0.006       0.103       0.311       4.350      37.800       6.540
COEF. OF VARIATION..............    0.362       0.296       0.048       0.058       0.045       0.100       0.080       0.454
PARAMETER RANGE
         MIN....................    2.400       5.600       0.100       1.300       2.000      10.000     100.000      10.000
         MAX....................   26.000      90.000       0.300       4.000      12.000     240.000     900.000      70.000
# OF EVENTS.....................        4           4           2           2           2           2           2           2
TOTAL FLOW VOLUME(INCH).........    0.209       0.209       0.117       0.117       0.117       0.117       0.117       0.117
TOTAL MASS LOAD(LBS)............  138.000     355.000       1.900      28.300       0.110       0.698       7.630       0.231
CONCENTRATION(LBS/AC-IN)........    1.090       2.800       0.027       0.400       0.002       0.010       0.108       0.003

                                   1092       70300       70507
                                   ZINC      RESIDUE      PHOS-T
                                  ZN.TOT     DISS-180     ORTHO
                                   UG/L       C   MG/     MG/L P
                                 --------    --------    --------
MEAN............................  215.000      81.500       0.241
STANDARD DEVIATION..............   12.800      30.400       0.050
COEF. OF VARIATION..............    0.060       0.373       0.207
PARAMETER RANGE
         MIN....................   60.000       1.020       0.040
         MAX....................  410.000     360.000       0.440
# OF EVENTS.....................        2           4           4
TOTAL FLOW VOLUME(INCH).........    0.117       0.209       0.209
TOTAL MASS LOAD(LBS)............    3.450    2340.000       6.920
CONCENTRATION(LBS/AC-IN)........    0.049      18.500       0.055
```

*** TABLE X - 20. ***

```
                         ********************************
                         *      SUMMARY OF EVENTS       *
                         ********************************
                         *     CATCHMENT FILE : 10      *
              ****************************************************
              * DENVER, COLORADO.   NORTH AVENUE STORM DRAIN.   (CO 1 2) *
              ****************************************************
              *   STORM SEWERED AREA        CATCHMENT AREA   76.70 ACRES *
              ****************************************************


                                RAINFALL                                        FLOW
                                --------                                        ----

EVENT  RAIN  DATE(START-END)      DURATION  VOLUME  AVG   PEAK     BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)    (INCH)  RAIN  RAIN     LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                    IN/HR IN/HR    HRS                                                   CFS
-----  ----  ---------------      --------  ------  ----  ----     ----- ---------------    --------   ------   ------   ----  ----


   1    123    77/ 4/11 14:20       1.83    0.160  0.087  0.24     1.67   77/ 4/11 14:30      2.58      0.036    0.225    3.40
               77/ 4/11 16:10                                             77/ 4/11 17: 5

   2    123    77/ 4/12 14:32       3.30    0.260  0.079  0.30     0.93   77/ 4/12 14:46      5.98      0.079    0.305    3.50
               77/ 4/12 17:50                                             77/ 4/12 20:45

   3    123    77/ 4/15  0:10       9.50    0.700  0.074  0.24     7.33   77/ 4/15  0:10      9.50      0.188    0.269    4.30
               77/ 4/15  9:40                                             77/ 4/15  9:40

   4    123    77/ 4/19 13:40       7.67    0.740  0.097  0.24     5.33   77/ 4/19 13:40     16.25      0.334    0.451    3.30
               77/ 4/19 21:20                                             77/ 4/20  5:55

   5    123    77/ 5/20 14:18       5.70    0.120  0.021  0.30     5.62   77/ 5/20 14:18      6.70      0.034    0.286    3.40
               77/ 5/20 20: 0                                             77/ 5/20 21: 0
```

*** TABLE X - 21. ***

```
                                    ****************************
                                    *    STATISTICAL SUMMARY   *
                                    ****************************
                                    *    CATCHMENT FILE : 10   *
                        ********************************************************
                        * DENVER, COLORADO.   NORTH AVENUE STORM DRAIN.   (CO 1 2) *
                        ********************************************************
                        *   STORM SEWERED AREA        CATCHMENT AREA  76.70 ACRES *
                        ********************************************************

                                        95         403         410         440         530         535         600         605
                                  CNDUCTVY         LAB       T ALK    HCO3 ION     RESIDUE     RESIDUE     TOTAL N       ORG N
                                    AT 25C          PH       CACO3        HCO3    TOT NFLT    VOL NFLT           N           N
                                  MICROMHO          SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                  --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................   116.000       8.020      38.300      46.600     478.000      83.900       2.250       1.480
STANDARD DEVIATION................     0.000       0.526       0.075       0.073       0.935       0.140       0.317       0.312
COEF. OF VARIATION................     0.000       0.066       0.002       0.002       0.002       0.002       0.141       0.211
PARAMETER RANGE
        MIN.......................    85.000       7.000      34.000      41.000     204.000       1.400       1.500       0.730
        MAX.......................   180.000       8.600      54.000      66.000     848.000     152.000       6.200       4.000
# OF EVENTS.......................         1           2           1           1           1           1           2           2
TOTAL FLOW VOLUME(INCH)...........     0.145       0.219       0.145       0.145       0.145       0.145       0.220       0.220
TOTAL MASS LOAD(LBS)..............**********  **********      96.500     118.000    1210.000     211.000       8.600       5.640
CONCENTRATION(LBS/AC-IN)..........**********  **********       8.680      10.600     108.000      19.000       0.511       0.335

                                       610         615         620         625         630         666         681         689
                                     NH3-N       NO2-N       NO3-N    TOT KJEL     NO2&NO3    PHOS-DIS     D ORG C     S ORG C
                                     TOTAL       TOTAL       TOTAL           N     N-TOTAL                       C           C
                                      MG/L        MG/L        MG/L        MG/L        MG/L      MG/L P        MG/L        MG/L
                                  --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................     0.272       0.067       0.469       1.750       0.507       0.025       8.630      16.700
STANDARD DEVIATION................     0.033       0.000       0.001       0.346       0.040       0.000       0.017       0.031
COEF. OF VARIATION................     0.120       0.002       0.002       0.198       0.078       0.002       0.002       0.002
PARAMETER RANGE
        MIN.......................     0.170       0.050       0.330       0.970       0.360       0.010       6.400       9.200
        MAX.......................     0.700       0.440       1.500       4.600       1.900       0.040      40.000      25.000
# OF EVENTS.......................         2           1           1           2           2           1           1           1
TOTAL FLOW VOLUME(INCH)...........     0.220       0.145       0.145       0.220       0.219       0.145       0.145       0.145
TOTAL MASS LOAD(LBS)..............     1.040       0.169       1.180       6.680       1.930       0.063      21.800      42.200
CONCENTRATION(LBS/AC-IN)..........     0.062       0.015       0.106       0.397       0.115       0.006       1.960       3.790

                                       900         915         925         930         931         935         940         946
                                  TOT HARD     CALCIUM     MGNSIUM      SODIUM      SODIUM     PTSSIUM    CHLORIDE     SULFATE
                                     CACO3     CA,DISS       CACO3     NA,DISS    ADSBTION      K,DISS          CL    SO4-DISS
                                      MG/L        MG/L        MG/L        MG/L       RATIO        MG/L        MG/L        MG/L
                                  --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................    25.100       8.260       1.070      11.900       1.040       1.250       9.380       8.100
STANDARD DEVIATION................     0.035       0.017       0.002       0.019       0.001       0.002       0.020       0.016
COEF. OF VARIATION................     0.001       0.002       0.002       0.002       0.001       0.002       0.002       0.002
PARAMETER RANGE
        MIN.......................     3.800       6.200       0.800       7.000       0.700       0.700       4.600       6.200
        MAX.......................    44.000      15.000       2.100      23.000       1.500       2.700      25.000      21.000
# OF EVENTS.......................         1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH)...........     0.145       0.145       0.145       0.145       0.145       0.145       0.145       0.145
TOTAL MASS LOAD(LBS)..............    63.300      20.800       2.690      29.900       2.610       3.150      23.600      20.400
CONCENTRATION(LBS/AC-IN)..........     5.690       1.870       0.242       2.690       0.235       0.284       2.130       1.840
```

*** TABLE X - 22. ***

```
                                          ***********************************
                                          *      STATISTICAL SUMMARY        *
                                          ***********************************
                                          *      CATCHMENT FILE : 10        *
                           ******************************************************************
                           * DENVER, COLORADO.   NORTH AVENUE STORM DRAIN.      (CD 1 2) *
                           ******************************************************************
                           *   STORM SEWERED AREA          CATCHMENT AREA   76.70 ACRES *
                           ******************************************************************

                                      950        955       1002       1042       1051       1056       1092      70300
                                   FLUORIDE    SILICA    ARSENIC     COPPER      LEAD     MANGNESE      ZINC    RESIDUE
                                    F,DISS    DISOLVED    AS.TOT     CU.TOT     PB.TOT    MN,DISS     ZN.TOT   DISS-180
                                     MG/L       MG/L       UG/L       UG/L       UG/L       UG/L       UG/L     C   MG/
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................    0.172      2.710     12.100     49.600    329.000     20.100    311.000     68.800
STANDARD DEVIATION................    0.000      0.004      4.040      5.500     70.300      0.031     89.700      0.088
COEF. OF VARIATION................    0.002      0.002      0.334      0.111      0.214      0.002      0.288      0.001
PARAMETER RANGE
            MIN...................    0.100      2.100      6.000     20.000    100.000     10.000    150.000      7.000
            MAX...................    0.300      3.500     30.000    250.000   1000.000    120.000   1100.000    148.000
# OF EVENTS.......................        1          1          2          2          2          1          2          1
TOTAL FLOW VOLUME(INCH)...........    0.145      0.145      0.219      0.219      0.219      0.135      0.219      0.145
TOTAL MASS LOAD(LBS)..............    0.433      6.830      0.046      0.189      1.250      0.047      1.180    173.000
CONCENTRATION(LBS/AC-IN)..........    0.039      0.614      0.003      0.011      0.075      0.005      0.071     15.600

                                    70507
                                    PHOS-T
                                    ORTHO
                                    MG/L P
                                   --------
MEAN..............................    0.295
STANDARD DEVIATION................    0.102
COEF. OF VARIATION................    0.346
PARAMETER RANGE
            MIN...................    0.040
            MAX...................    1.000
# OF EVENTS.......................        2
TOTAL FLOW VOLUME(INCH)...........    0.220
TOTAL MASS LOAD(LBS)..............    1.130
CONCENTRATION(LBS/AC-IN)..........    0.067



                                          *** TABLE X - 22. ***
                                   ********************************
                                   *     SUMMARY OF EVENTS        *
                                   ********************************
                                   *     CATCHMENT FILE : 11      *
                     *********************************************************************
                     * DENVER, COLORADO. THIRTY-SIXTH STREET STORM SEWER (CO 1 3) *
                     *********************************************************************
                     *   STORM SEWERED AREA          CATCHMENT AREA 2246.00 ACRES *
                     *********************************************************************


                                RAINFALL                                                  FLOW
                                --------                                                  ----

EVENT RAIN DATE(START-END)   DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME  RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN    (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)  COEFF.  FLOW  DAYS
                                               IN/HR IN/HR  HRS                                                CFS
----- ---- ---------------  --------  ------  ----  ----   ----- ---------------   --------   ------  ------  ----  ----


  1   123   76/ 5/24 19:25     6.08   0.050 0.008  0.36    6.25  76/ 5/24 19:25     10.17      0.017   0.340  43.00
            76/ 5/25  1:30                                       76/ 5/25  5:35

      122   76/ 5/24 19:25     6.08   0.080 0.013  0.48    6.25                                        0.213
            76/ 5/25  1:30

      121   76/ 5/24 19:30     5.58   0.120 0.021  0.72    6.17                                        0.142
            76/ 5/25  1: 5

  2   123   76/ 8/24 20:30     0.08   0.100 1.219  0.49    0.58  76/ 8/24 20:30      3.00      0.017   0.173  42.00
            76/ 8/24 20:35                                       76/ 8/24 23:30

      122   76/ 8/24 20:30     0.16   0.120 0.731  1.22    0.58                                        0.144
            76/ 8/24 20:40

      121   76/ 8/24 20:30     0.25   0.050 0.200  0.24    0.58                                        0.347
            76/ 8/24 20:45

  3   123   77/ 5/20 14:50     0.25   0.020 0.080  0.12    0.50  77/ 5/20 14:50      2.83      0.025   1.266  99.00
            77/ 5/20 15: 5                                       77/ 5/20 17:40

      122   77/ 5/20 14:50     0.33   0.090 0.270  0.48    0.50                                        0.281
            77/ 5/20 15:10

      121   77/ 5/20 14:50     0.50   0.080 0.160  0.24    0.50                                        0.316
            77/ 5/20 15:20

  4   123   77/ 5/28  8: 0    10.00   0.140 0.014  0.24    4.50  77/ 5/28  8: 0     10.00      0.020   0.145  52.00
            77/ 5/28 18: 0                                       77/ 5/28 18: 0

      122   77/ 5/28  8: 0     8.75   0.110 0.013  0.24    4.50                                        0.184
            77/ 5/28 16:45

      121   77/ 5/28  8: 0     4.67   0.120 0.026  0.24    4.50                                        0.169
            77/ 5/28 12:40

  5   123   77/ 6/ 5 22:25    18.25   0.350 0.019  0.48    2.17  77/ 6/ 5 22:25     21.17      0.086   0.246  55.00
            77/ 6/ 6 16:40                                       77/ 6/ 6 19:35

      122   77/ 6/ 5 22:45    18.42   0.410 0.022  0.48    1.83                                        0.210
            77/ 6/ 6 17:10

      121   77/ 6/ 5 22:25    18.92   0.420 0.022  1.08    2.17                                        0.205
            77/ 6/ 6 17:20

  6   123   77/ 6/19  4:45     3.75   0.170 0.045  0.12    2.67  77/ 6/19  4:35      6.42      0.039   0.228  53.00
            77/ 6/19  8:30                                       77/ 6/19 11: 0

      122   77/ 6/19  4:35     4.17   0.190 0.046  0.24    2.83                                        0.204
            77/ 6/19  8:45

      121   77/ 6/19  4:35     4.50   0.180 0.040  0.48    2.83                                        0.215
            77/ 6/19  9: 5
```

*** TABLE X - 23. ***

SUMMARY OF EVENTS(CONTINUED)

CATCHMENT FILE : 11

DENVER, COLORADO. THIRTY-SIXTH STREET STORM SEWER (CO 1 3)

STORM SEWERED AREA CATCHMENT AREA 2246.00 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
7	123	77/ 7/ 5 17: 0 77/ 7/ 5 20:40	3.66	0.520	0.142	1.10	0.66	77/ 7/ 5 17: 0 77/ 7/ 5 23:20	6.33	0.111	0.214	183.00	
	122	77/ 7/ 5 17: 0 77/ 7/ 5 20:45	3.75	0.380	0.101	0.73	0.66				0.292		
	121	77/ 7/ 5 17: 0 77/ 7/ 5 20:30	3.50	0.460	0.131	0.98	0.66				0.242		

*** TABLE X - 23. ***

```
                                                 ********************************
                                                 *      STATISTICAL SUMMARY     *
                                                 ********************************
                                                 *       CATCHMENT FILE : 11    *
                                   **************************************************************
                                   * DENVER, COLORADO. THIRTY-SIXTH STREET STORM SEVER (CO 1 3) *
                                   **************************************************************
                                   *    STORM SEVERED AREA         CATCHMENT AREA 2246.00 ACRES *
                                   **************************************************************

                                       95         310         403         530         535         600         605         610
                                 CNDUCTVY         BOD         LAB     RESIDUE     RESIDUE     TOTAL N       ORG N       NH3-N
                                   AT 25C       5 DAY          PH    TOT NFLT    VOL NFLT           N           N       TOTAL
                                 MICROMHO        MG/L          SU        MG/L        MG/L        MG/L        MG/L        MG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................  312.000      65.400       7.400      87.200      26.200       6.180       3.420       1.520
STANDARD DEVIATION..............    0.000       0.125       0.000       0.198       0.049       0.014       0.008       0.003
COEF. OF VARIATION..............    0.000       0.002       0.000       0.002       0.002       0.002       0.002       0.002
PARAMETER RANGE
          MIN...................  280.000      34.000       7.200      15.000       8.000       4.900       2.300       0.650
          MAX...................  420.000      70.000       7.600     203.000      46.000       7.200       4.300       1.800
# OF EVENTS.....................        1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH).........    0.002       0.002       0.002       0.002       0.002       0.002       0.002       0.002
TOTAL MASS LOAD(LBS)............ **********    50.700  **********      68.900      20.700       4.890       2.700       1.200
CONCENTRATION(LBS/AC-IN)........ **********    14.800  **********      19.800       5.950       1.400       0.775       0.345

                                      615         620         625         630         666         681         915         930
                                    NO2-N       NO3-N    TOT KJEL     NO2&NO3    PHOS-DIS     D ORG C     CALCIUM      SODIUM
                                    TOTAL       TOTAL           N     N-TOTAL                       C    CA,DISS     NA,DISS
                                     MG/L        MG/L        MG/L        MG/L      MG/L P        MG/L        MG/L        MG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................    0.269       0.985       4.940       1.250       1.300      22.700      24.900      26.600
STANDARD DEVIATION..............    0.001       0.002       0.010       0.003       0.002       0.049       0.052       0.059
COEF. OF VARIATION..............    0.002       0.002       0.002       0.002       0.002       0.002       0.002       0.002
PARAMETER RANGE
          MIN...................    0.110       0.180       3.200       0.390       0.860      15.000      21.000      22.000
          MAX...................    0.670       1.600       5.800       2.000       2.000      50.000      35.000      40.000
# OF EVENTS.....................        1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH).........    0.002       0.002       0.002       0.002       0.001       0.002       0.002       0.002
TOTAL MASS LOAD(LBS)............    0.212       0.779       3.910       0.991       0.352      17.900      19.700      21.000
CONCENTRATION(LBS/AC-IN)........    0.061       0.223       1.120       0.284       0.294       5.140       5.640       6.030

                                      940         946       31501       31616       31679       70300       70507
                                 CHLORIDE     SULFATE    TOT COLI    FEC COLI    FECSTREP     RESIDUE      PHOS-T
                                       CL    SO4-DISS    MFIMENDO    MFM-FCBR    MF M-ENT    DISS-180       ORTHO
                                     MG/L        MG/L    LN/100ML    LN/100ML    LN/100ML    C   MG/       MG/L P
                                 --------    --------    --------    --------    --------    --------    --------
MEAN............................   24.600      37.500      12.300      11.600      10.600     250.000       0.539
STANDARD DEVIATION..............    0.054       0.075       0.000       0.000       0.000       0.548       0.001
COEF. OF VARIATION..............    0.002       0.002       0.000       0.000       0.000       0.002       0.002
PARAMETER RANGE
          MIN...................   22.000      33.000      11.500      10.500       9.210     228.000       0.210
          MAX...................   40.000      48.000      12.900      12.700      11.700     314.000       0.740
# OF EVENTS.....................        1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH).........    0.002       0.002       0.002       0.002       0.002       0.002       0.002
TOTAL MASS LOAD(LBS)............   19.500      29.600      27.400      26.700      25.700     197.000       0.426
CONCENTRATION(LBS/AC-IN)........    5.580       8.490      26.100      25.400      24.500      56.600       0.122
```

*** TABLE X - 24. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 12

NORTHGLENN, COLORADO. SOUTH PLATTE TRIBUTARY. (CO 1 4)

STORM SEWERED AREA CATCHMENT AREA 307.00 ACRES

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	69/ 5/ 6 11:20 69/ 5/ 8 1: 0	37.67	3.660	0.097	1.20	29.33	69/ 5/ 6 17:40 69/ 5/ 8 2:35	32.92	0.436	0.119	24.00	
2	123	69/ 6/11 6: 0 69/ 6/11 13:30	7.50	0.430	0.057	0.60	4.58	69/ 6/11 9:25 69/ 6/11 11:40	2.25	0.016	0.037	2.80	
3	123	69/ 6/21 20: 0 69/ 6/21 21:55	1.91	0.470	0.246	1.22	1.91	69/ 6/21 21:40 69/ 6/21 23:45	2.09	0.020	0.042	5.30	
4	123	69/ 6/23 18:45 69/ 6/23 21:20	2.58	0.640	0.248	4.07	3.00	69/ 6/23 21:10 69/ 6/24 0:30	3.34	0.074	0.115	23.00	
5	123	70/ 6/10 17:35 70/ 6/11 13:55	20.33	2.290	0.113	0.48	15.58	70/ 6/10 17:35 70/ 6/11 17: 5	23.50	0.466	0.203	16.00	

*** TABLE X - 25. ***

```
                                         ******************************
                                         *      SUMMARY OF EVENTS     *
                                         ******************************
                                         *      CATCHMENT FILE : 13   *
                              **************************************************
                              * DENVER, COLORADO.  HARVARD GULCH.     (CO 1 5) *
                              **************************************************
                              *   STORM SEWERED AREA    CATCHMENT AREA 2956.00 ACRES *
                              **************************************************


                                  RAINFALL                                             FLOW
                                  --------                                             ----

EVENT RAIN DATE(START-END)     DURATION VOLUME AVG  PEAK  BASIN DATE(START-END) DURATION VOLUME  RUNOFF PEAK DRY
      GAGE YR,MON,D,HR,MIN      (HRS)  (INCH) RAIN RAIN  LAG   YR,MON,D,HR,MIN (HRS)    (INCH)  COEFF. FLOW DAYS
                                              IN/HR IN/HR HRS                                          CFS
----- ---- ---------------     -------- ------ ----- ----- ----- --------------- -------- ------  ------ ---- ----


  1   123   67/ 7/ 3 21: 0       0.25   0.520 2.080  3.78  0.41  67/ 7/ 3 21:10   4.00    0.149   0.287  470.00
            67/ 7/ 3 21:15                                       67/ 7/ 4  1:10

      122   67/ 7/ 3 21: 0       0.16   0.630 3.840  5.36  0.41                                   0.237
            67/ 7/ 3 21:10

      121   67/ 7/ 3 21: 0       0.25   0.590 2.360  4.51  0.41                                   0.253
            67/ 7/ 3 21:15

  2   123   67/ 7/ 8 17:40       0.59   0.260 0.444  1.22  0.92  67/ 7/ 8 18:15   2.41    0.078   0.298  197.00
            67/ 7/ 8 18:15                                       67/ 7/ 8 20:40

      122   67/ 7/ 8 17:40       0.59   0.490 0.836  3.78  0.92                                   0.158
            67/ 7/ 8 18:15

      121   67/ 7/ 8 17:50       0.25   0.200 0.800  1.22  0.75                                   0.388
            67/ 7/ 8 18: 5

  3   123   67/ 7/15 13:30       3.66   0.600 0.164  0.61  1.66  67/ 7/15 13:30   6.16    0.181   0.302  158.00
            67/ 7/15 17:10                                       67/ 7/15 19:40

      122   67/ 7/15 13:20       3.83   0.700 0.183  0.48  1.83                                   0.259
            67/ 7/15 17:10

      121   67/ 7/15 13:20       3.83   0.670 0.175  0.79  1.83                                   0.270
            67/ 7/15 17:10

  4   123   69/ 6/ 8 15:15       5.75   3.190 0.555 12.65  1.25  69/ 6/ 8 14: 0   8.00    0.785   0.246 1610.00
            69/ 6/ 8 21: 0                                       69/ 6/ 8 22: 0

      122   69/ 6/ 8 15:30       5.00   1.810 0.362  3.00  1.00                                   0.434
            69/ 6/ 8 20:30

      121   69/ 6/ 8 15:30       5.17   2.200 0.426  6.00  1.00                                   0.357
            69/ 6/ 8 20:40
```

*** TABLE X - 26. ***

```
                                      ********************************
                                      *      SUMMARY OF EVENTS       *
                                      ********************************
                                      *      CATCHMENT FILE : 14     *
                          ******************************************************
                          * DENVER, COLORADO.  STAPLEDON AIRPORT.        (CO 1 6) *
                          ******************************************************
                          *  STORM SEWERED AREA        CATCHMENT AREA  73.00 ACRES *
                          ******************************************************


                                  RAINFALL                                                      FLOW
                                  --------                                                      ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)   DURATION    VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN   (HRS)       (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                   CFS
-----  ----  --------------      --------  ------  -----  -----   ----- --------------   --------    ------   ------   ----  ----


  1    123     70/ 6/10 16:55     19.25     2.310  0.120  3.59     9.67  70/ 6/10 16:55    23.60      1.169    0.506   13.00
               70/ 6/11 12:10                                            70/ 6/11 16:31

  2    123     70/ 7/ 8 19:15      0.83     0.420  0.505  1.71     0.41  70/ 7/ 8 19:25     4.52      0.181    0.431   29.00
               70/ 7/ 8 20: 5                                            70/ 7/ 8 23:56
```

*** TABLE X - 27. ***

```
                    ****************************
                    *      SUMMARY OF EVENTS   *
                    ****************************
                    *      CATCHMENT FILE : 15 *
*************************************************************
* BROWARD COUNTY, FLORIDA.  RESIDENTIAL.          (FL 1 1) *
*************************************************************
*    STORM SEWERED AREA        CATCHMENT AREA   40.80 ACRES *
*************************************************************
```

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	74/ 4/16 23: 3 74/ 4/16 23:31	0.47	0.270	0.577	2.00	0.58	74/ 4/16 23:22 74/ 4/17 0:40	1.30	0.009	0.033	0.96	
	122	74/ 4/16 23: 0 74/ 4/16 23:29	0.48	0.162	0.336	1.75	0.63				0.055		
2	123	74/ 5/ 5 17:15 74/ 5/ 5 19:52	2.62	0.899	0.344	5.07	1.07	74/ 5/ 5 17:29 74/ 5/ 5 20: 0	2.52	0.111	0.123	9.09	
	122	74/ 5/ 5 17:15 74/ 5/ 5 19:55	2.67	1.318	0.494	8.85	1.07				0.084		
	121	74/ 5/ 5 17:20 74/ 5/ 5 19:53	2.55	1.006	0.395	7.29	0.98				0.110		
3	123	74/ 5/ 7 20:23 74/ 5/ 7 23: 0	2.62	0.364	0.139	3.87	0.28	74/ 5/ 7 20:31 74/ 5/ 7 22:34	2.05	0.011	0.030	1.16	
	122	74/ 5/ 7 20:23 74/ 5/ 7 23:42	3.32	0.470	0.142	5.36	0.28				0.023		
	121	74/ 5/ 7 20:23 74/ 5/ 7 23:58	3.58	0.394	0.110	3.42	0.28				0.028		
4	123	74/ 5/ 8 16:20 74/ 5/ 8 18:16	1.93	0.348	0.180	1.39	0.52	74/ 5/ 8 16:37 74/ 5/ 8 18:32	1.92	0.026	0.075	1.26	
	122	74/ 5/ 8 16:20 74/ 5/ 8 17:55	1.58	0.470	0.297	2.18	0.52				0.055		
	121	74/ 5/ 8 16:20 74/ 5/ 8 17:56	1.60	0.501	0.313	2.18	0.52				0.052		
5	123	74/ 5/14 20:18 74/ 5/15 0:21	4.05	0.387	0.096	0.64	1.87	74/ 5/14 21:33 74/ 5/15 0: 5	2.53	0.015	0.038	0.76	
	122	74/ 5/14 20:15 74/ 5/14 22: 1	1.77	0.328	0.185	1.27	1.92				0.045		
	121	74/ 5/14 20:15 74/ 5/15 0:19	4.07	0.649	0.160	2.03	1.92				0.023		
6	123	74/ 5/28 19:20 74/ 5/28 20:59	1.65	0.178	0.108	0.74	0.82	74/ 5/28 19:42 74/ 5/28 20:24	0.70	0.001	0.008	0.15	
	122	74/ 5/28 19:20 74/ 5/28 20:57	1.62	0.179	0.111	0.74	0.82				0.008		
7	123	74/ 6/ 3 20:40 74/ 6/ 3 22:30	1.83	0.184	0.100	0.74	0.90	74/ 6/ 3 21: 8 74/ 6/ 3 22:19	1.18	0.003	0.017	0.24	
	122	74/ 6/ 3 20:42 74/ 6/ 3 22:13	1.52	0.332	0.219	1.39	0.87				0.010		

*** TABLE X - 28. ***

```
                                     ********************************
                                     * SUMMARY OF EVENTS(CONTINUED) *
                                     ********************************
                                     *      CATCHMENT FILE : 15     *
                           ***************************************************
                           * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.  (FL 1 1) *
                           ***************************************************
                           *   STORM SEWERED AREA   CATCHMENT AREA  40.80 ACRES *
                           ***************************************************


                              RAINFALL                                                    FLOW
                              --------                                                    ----

EVENT RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK   BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN     (HRS)    (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR  IN/HR  HRS                                                CFS
----- ----  ---------------     --------  ------  ----   ----   ----- ---------------    --------  ------  ------  ----  ----


  7   121    74/ 6/ 3 20:46     1.17     0.136  0.117  0.55    0.80  74/ 6/ 3 21: 8     1.18     0.003   0.023    0.24
             74/ 6/ 3 21:56                                          74/ 6/ 3 22:19

  8   123    74/ 6/ 5 14:23     2.08     0.593  0.285  3.50    0.38  74/ 6/ 5 14:30     2.25     0.033   0.055    2.81
             74/ 6/ 5 16:28                                          74/ 6/ 5 16:45

  9   123    74/ 6/15 14:22     1.22     0.573  0.471  2.31    0.50  74/ 6/15 14:34     1.93     0.030   0.052    1.60
             74/ 6/15 15:35                                          74/ 6/15 16:30

      122    74/ 6/15 14:24     2.08     0.564  0.271  2.31    0.47                                      0.052
             74/ 6/15 16:29

      121    74/ 6/15 14:22     1.22     0.487  0.400  1.91    0.50                                      0.061
             74/ 6/15 15:35

 10   123    74/ 6/16 10: 1     2.25     1.257  0.559  7.91    0.40  74/ 6/16 10: 5     2.42     0.185   0.147   18.56
             74/ 6/16 12:16                                          74/ 6/16 12:30

      122    74/ 6/16  9:58     2.45     1.110  0.453  6.00    0.45                                      0.166
             74/ 6/16 12:25

      121    74/ 6/16  9:58     2.08     1.075  0.516  5.35    0.45                                      0.172
             74/ 6/16 12: 3

 11   123    74/ 6/17 13:33     0.30     0.522  1.740  3.23    0.43  74/ 6/17 13:43     0.98     0.020   0.038    2.23
             74/ 6/17 13:51                                          74/ 6/17 14:42

      122    74/ 6/17 13:33     0.32     0.358  1.132  2.36    0.43                                      0.056
             74/ 6/17 13:52

      121    74/ 6/17 13:34     0.33     0.363  1.089  3.96    0.42                                      0.055
             74/ 6/17 13:54

 12   123    74/ 7/ 1 20:11     0.05     0.003  0.061  0.10   -0.91  74/ 7/ 1 18:55     2.55     0.241  77.784   20.29
             74/ 7/ 1 20:14                                          74/ 7/ 1 21:28

      122    74/ 7/ 1 18:44     2.32     1.312  0.567  5.29    0.54                                      0.184
             74/ 7/ 1 21: 3

      121    74/ 7/ 1 18:42     1.46     1.344  0.918  7.74    0.57                                      0.179
             74/ 7/ 1 20:10

 13   123    74/ 7/ 2 11:10     1.32     0.470  0.357  2.94    0.43  74/ 7/ 2 11:15     1.36     0.034   0.072    3.12
             74/ 7/ 2 12:29                                          74/ 7/ 2 12:37

 14   123    74/ 7/ 4  6: 8     0.77     0.277  0.362  2.84    0.57  74/ 7/ 4  6:15     1.25     0.016   0.059    0.96
             74/ 7/ 4  6:54                                          74/ 7/ 4  7:30

 15   123    74/ 7/ 5 13: 2     0.48     0.453  0.936  3.23    0.43  74/ 7/ 5 13:11     1.32     0.035   0.076    3.95
             74/ 7/ 5 13:31                                          74/ 7/ 5 14:30

 16   123    74/ 7/15 22:37     1.02     0.476  0.467  3.43    0.42  74/ 7/15 22:49     1.45     0.018   0.038    1.84
             74/ 7/15 23:38                                          74/ 7/16  0:16


                                           *** TABLE X - 28. ***
```

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 15 *

* BROWARD COUNTY, FLORIDA. RESIDENTIAL. (FL 1 1) *

* STORM SEWERED AREA CATCHMENT AREA 40.80 ACRES *

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
16	122	74/ 7/15 22:36 74/ 7/15 23:46	1.17	0.446	0.382	3.33	0.43	74/ 7/15 22:49 74/ 7/16 0:16	1.45	0.018	0.041	1.84	
	121	74/ 7/15 22:38 74/ 7/15 23:49	1.18	0.348	0.294	2.65	0.40				0.053		
17	123	74/ 7/18 2:12 74/ 7/18 4:53	2.68	0.740	0.276	5.39	0.58	74/ 7/18 2:34 74/ 7/18 5: 0	2.43	0.072	0.098	4.31	
	122	74/ 7/18 2: 8 74/ 7/18 3:44	1.60	0.917	0.574	5.20	0.65				0.079		
	121	74/ 7/18 2: 5 74/ 7/18 3:48	1.71	0.913	0.532	4.42	0.70				0.079		
18	122	74/ 7/21 17:12 74/ 7/21 19: 9	1.95	0.328	0.168	4.22	0.82	74/ 7/21 17:21 74/ 7/21 19:30	2.15	0.016	0.050	0.82	
19	123	74/ 7/31 14:22 74/ 7/31 15:59	1.62	0.193	0.119	3.06	0.57	74/ 7/31 14:46 74/ 7/31 15:30	0.73	0.004	0.019	0.51	
	122	74/ 7/31 14:36 74/ 7/31 15:21	0.75	0.139	0.186	2.12	0.33				0.027		
	121	74/ 7/31 14:30 74/ 7/31 15:18	0.80	0.150	0.188	2.35	0.43				0.025		
20	123	74/ 8/ 3 5:50 74/ 8/ 3 8:48	2.96	0.907	0.306	5.59	0.27	74/ 8/ 3 5:55 74/ 8/ 3 8:41	2.77	0.043	0.048	4.31	
	122	74/ 8/ 3 5:30 74/ 8/ 3 8:51	3.35	0.652	0.195	3.43	0.60				0.066		
	121	74/ 8/ 3 5:49 74/ 8/ 3 8:59	3.16	0.769	0.243	4.70	0.28				0.056		
21	123	74/ 8/12 20: 0 74/ 8/12 22: 8	2.13	0.695	0.326	2.45	0.93	74/ 8/12 20:21 74/ 8/12 22:15	1.90	0.012	0.018	0.57	
	122	74/ 8/12 20: 0 74/ 8/12 22:14	2.23	0.606	0.272	3.92	0.93				0.020		
	121	74/ 8/12 20: 8 74/ 8/12 22: 4	1.93	0.430	0.223	1.47	0.80				0.028		
22	123	74/ 8/17 19:14 74/ 8/17 20:30	1.27	0.695	0.548	2.94	0.37	74/ 8/17 19:21 74/ 8/17 20:50	1.48	0.043	0.062	3.78	
	122	74/ 8/17 19:14 74/ 8/17 20:57	1.72	0.674	0.392	2.65	0.37				0.064		
	121	74/ 8/17 19:14 74/ 8/17 20:14	1.00	0.675	0.675	3.24	0.37				0.063		

*** TABLE X - 28. ***

```
               ********************************
               * SUMMARY OF EVENTS(CONTINUED) *
               ********************************
               *       CATCHMENT FILE : 15    *
*******************************************************************
* BROWARD COUNTY, FLORIDA.  RESIDENTIAL.              (FL 1 1) *
*******************************************************************
*   STORM SEWERED AREA          CATCHMENT AREA   40.80 ACRES *
*******************************************************************
```

EVENT	RAIN GAGE	RAINFALL DATE(START-END) YR,MON,D,HR,MIN	RAINFALL DURATION (HRS)	RAINFALL VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	FLOW DATE(START-END) YR,MON,D,HR,MIN	FLOW DURATION (HRS)	FLOW VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
23	123	74/ 8/23 5:34 74/ 8/23 6:34	1.00	0.338	0.338	3.53	0.30	74/ 8/23 5:41 74/ 8/23 8: 0	2.32	0.031	0.092	2.23	
	122	74/ 8/23 5:34 74/ 8/23 8: 0	2.43	0.323	0.133	5.00	0.30				0.096		
	121	74/ 8/23 5:35 74/ 8/23 7:29	1.90	0.311	0.164	3.72	0.28				0.100		
24	123	74/ 8/25 9:52 74/ 8/25 11:14	1.37	0.306	0.224	3.33	0.34	74/ 8/25 10: 0 74/ 8/25 11:30	1.50	0.030	0.096	3.12	
	122	74/ 8/25 9:50 74/ 8/25 11:25	1.58	0.300	0.190	3.92	0.37				0.098		
	121	74/ 8/25 9:51 74/ 8/25 10:38	0.79	0.317	0.404	4.02	0.35				0.093		
25	123	74/ 9/ 5 11: 8 74/ 9/ 5 12:52	1.73	0.118	0.068	1.47	0.58	74/ 9/ 5 11:15 74/ 9/ 5 13: 0	1.75	0.007	0.063	0.39	
	122	74/ 9/ 5 11: 8 74/ 9/ 5 12:58	1.83	0.106	0.058	2.06	0.58				0.070		
	121	74/ 9/ 5 11: 8 74/ 9/ 5 12:56	1.80	0.123	0.068	2.36	0.58				0.060		
26	123	74/ 9/ 5 18:44 74/ 9/ 5 21:39	2.92	1.677	0.575	13.33	0.37	74/ 9/ 5 18:52 74/ 9/ 5 22: 0	3.14	0.463	0.276	37.75	
	122	74/ 9/ 5 18:46 74/ 9/ 5 21:27	2.68	1.642	0.612	9.80	0.33				0.282		
	121	74/ 9/ 5 18:41 74/ 9/ 5 21:32	2.85	1.789	0.627	9.61	0.42				0.259		
27	123	74/ 9/ 6 10:38 74/ 9/ 6 12: 1	1.38	0.237	0.172	2.64	0.30	74/ 9/ 6 10:45 74/ 9/ 6 12: 8	1.38	0.013	0.057	1.48	
	122	74/ 9/ 6 10:38 74/ 9/ 6 12: 1	1.38	0.216	0.156	2.65	0.30				0.062		
	121	74/ 9/ 6 10:38 74/ 9/ 6 12: 4	1.43	0.280	0.195	3.43	0.30				0.048		
28	123	74/ 9/24 19:28 74/ 9/25 0:18	4.83	2.092	0.433	7.16	0.65	74/ 9/24 19:45 74/ 9/25 0:15	4.50	0.360	0.172	32.84	
	122	74/ 9/24 19:33 74/ 9/25 0: 8	4.59	1.893	0.413	7.84	0.57				0.190		
	121	74/ 9/24 19:39 74/ 9/25 0:10	4.52	2.259	0.500	8.13	0.46				0.159		

*** TABLE X - 28. ***

```
                  ********************************
                  * SUMMARY OF EVENTS(CONTINUED) *
                  ********************************
                  *       CATCHMENT FILE : 15    *
*************************************************************
* BROWARD COUNTY, FLORIDA.  RESIDENTIAL.           (FL 1 1) *
*************************************************************
*    STORM SEWERED AREA        CATCHMENT AREA   40.80 ACRES *
*************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
29	123	74/ 9/25 12:20 74/ 9/25 19:53	7.55	0.444	0.059	2.65	0.45	74/ 9/25 12:30 74/ 9/25 20: 0	7.50	0.035	0.078	0.76	
	122	74/ 9/25 12:20 74/ 9/25 19:35	7.25	0.424	0.059	1.77	0.45				0.082		
	121	74/ 9/25 12:20 74/ 9/25 19: 8	6.80	0.507	0.075	2.94	0.45				0.069		
30	123	74/ 9/26 16:21 74/ 9/26 19:25	3.07	0.813	0.265	4.21	0.47	74/ 9/26 16:32 74/ 9/26 20: 0	3.47	0.087	0.107	5.66	
	122	74/ 9/26 16:21 74/ 9/26 19:48	3.45	0.835	0.242	5.29	0.47				0.104		
	121	74/ 9/26 16:21 74/ 9/26 19:53	3.54	0.998	0.282	4.61	0.47				0.087		
31	123	74/ 9/29 16:34 74/ 9/29 17:51	1.28	0.329	0.257	1.47	0.77	74/ 9/29 17: 3 74/ 9/29 19: 0	1.95	0.024	0.074	2.10	
	122	74/ 9/29 16:34 74/ 9/29 18:45	2.18	0.329	0.151	2.06	0.77				0.074		
	121	74/ 9/29 16:33 74/ 9/29 18:33	2.00	0.331	0.165	1.86	0.79				0.074		
32	123	74/ 9/30 14:10 74/ 9/30 23: 0	8.84	2.320	0.263	8.33	5.50	74/ 9/30 14:38 74/ 9/30 21:47	7.15	0.429	0.185	32.08	
	122	74/ 9/30 14:10 74/ 9/30 22:50	8.67	2.439	0.281	8.33	5.50				0.176		
	121	74/ 9/30 14:10 74/ 9/30 22:27	8.29	2.703	0.326	10.00	5.50				0.159		
33	123	74/10/ 3 15:30 74/10/ 3 18: 9	2.65	0.175	0.066	1.57	1.02	74/10/ 3 15:36 74/10/ 3 19: 0	3.40	0.021	0.119	0.89	
	122	74/10/ 3 15:30 74/10/ 3 17:55	2.41	0.181	0.075	1.18	1.02				0.115		
	121	74/10/ 3 15:30 74/10/ 3 18:35	3.08	0.222	0.072	1.57	1.02				0.093		
34	123	74/10/ 5 7:56 74/10/ 5 8:32	0.60	0.341	0.568	4.90	0.27	74/10/ 5 8: 2 74/10/ 5 9: 0	0.97	0.014	0.042	2.23	
	122	74/10/ 5 7:50 74/10/ 5 8:57	1.12	0.309	0.277	5.59	0.37				0.046		
	121	74/10/ 5 7:50 74/10/ 5 8:52	1.03	0.296	0.287	6.07	0.37				0.048		

*** TABLE X - 28. ***

```
                 ********************************
                 * SUMMARY OF EVENTS(CONTINUED) *
                 ********************************
                 *       CATCHMENT FILE : 15    *
        ****************************************************
        * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.    (FL 1 1) *
        ****************************************************
        *   STORM SEWERED AREA       CATCHMENT AREA  40.80 ACRES *
        ****************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
35	123	74/12/26 21:11 74/12/26 22:22	1.18	0.126	0.106	1.08	0.43	74/12/26 21:15 74/12/26 23: 0	1.75	0.010	0.078	0.57	
	122	74/12/26 21:11 74/12/26 22:21	1.17	0.135	0.115	1.96	0.43				0.072		
	121	74/12/26 21:11 74/12/26 22:47	1.60	0.176	0.110	3.03	0.43				0.055		
36	123	75/ 2/ 5 13:29 75/ 2/ 5 14:15	0.77	0.136	0.178	2.49	0.52	75/ 2/ 5 13:50 75/ 2/ 5 15: 0	1.17	0.009	0.070	0.90	
	122	75/ 2/ 5 13:36 75/ 2/ 5 14:29	0.88	0.159	0.180	2.58	0.40				0.060		
	121	75/ 2/ 5 13:29 75/ 2/ 5 14:16	0.78	0.158	0.201	2.12	0.52				0.060		
37	123	75/ 2/10 13: 6 75/ 2/10 14:56	1.83	0.375	0.205	1.66	0.83	75/ 2/10 13:37 75/ 2/10 15: 0	1.38	0.018	0.047	1.37	
	122	75/ 2/10 13: 7 75/ 2/10 14:45	1.63	0.374	0.229	2.03	0.82				0.047		
	121	75/ 2/10 13: 6 75/ 2/10 14:31	1.42	0.364	0.257	2.03	0.83				0.048		
38	123	75/ 2/24 21: 3 75/ 2/24 23: 0	1.95	0.455	0.233	2.49	1.07	75/ 2/24 21:15 75/ 2/24 23: 0	1.75	0.035	0.076	1.97	
	122	75/ 2/24 21: 3 75/ 2/24 22:56	1.88	0.459	0.244	6.18	1.07				0.076		
	121	75/ 2/24 21: 3 75/ 2/24 23: 0	1.95	0.453	0.232	2.40	1.07				0.077		
39	123	75/ 4/12 10:56 75/ 4/12 12:23	1.45	0.141	0.097	1.09	0.28	75/ 4/12 11: 0 75/ 4/12 12:30	1.50	0.017	0.118	1.16	
	122	75/ 4/12 10:56 75/ 4/12 12:30	1.57	0.124	0.079	1.20	0.28				0.134		
	121	75/ 4/12 10:56 75/ 4/12 11: 4	0.13	0.176	1.319	2.00	0.28				0.094		
40	123	75/ 5/ 5 19:30 75/ 5/ 5 21:24	1.90	0.228	0.120	1.30	0.45	75/ 5/ 5 19:38 75/ 5/ 5 21:52	2.23	0.038	0.165	3.95	
	122	75/ 5/ 5 19:30 75/ 5/ 5 21:41	2.18	0.288	0.132	1.57	0.45				0.130		
	121	75/ 5/ 5 19:30 75/ 5/ 5 21:37	2.12	0.202	0.133	1.66	0.45				0.133		

*** TABLE X - 28. ***

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                                   ********************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ********************************
                                   *       CATCHMENT FILE : 15    *
                          ***************************************************
                          * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.  (FL 1 1) *
                          ***************************************************
                          *    STORM SEWERED AREA    CATCHMENT AREA  40.80 ACRES *
                          ***************************************************


                                    RAINFALL                                        FLOW
                                    --------                                        ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                   IN/HR IN/HR  HRS                                             CFS
-----  ----  ---------------     --------  ------  ----  ----   ----  ---------------   --------  ------  ------  ----  ----


  41   123     75/ 5/ 7 19: 2      1.60    0.303  0.189  1.84    0.37   75/ 5/ 7 19:10     1.83     0.041   0.134   3.79
               75/ 5/ 7 20:38                                           75/ 5/ 7 21: 0

       122     75/ 5/ 7 19: 2      1.68    0.349  0.207  1.94    0.37                                      0.117
               75/ 5/ 7 20:43

       121     75/ 5/ 7 19: 2      0.42    0.293  0.702  1.93    0.37                                      0.139
               75/ 5/ 7 19:27

  42   122     75/ 5/ 9 17: 3      2.47    0.239  0.097  0.91    1.67   75/ 5/ 9 17:26     2.57     0.013   0.053   0.39
               75/ 5/ 9 19:31                                           75/ 5/ 9 20: 0

  43   122     75/ 5/10 16:12      4.77    1.060  0.222  4.70    1.15   75/ 5/10 16:40     4.12     0.321   0.303  22.86
               75/ 5/10 20:58                                           75/ 5/10 20:47

  44   122     75/ 5/13 17:15      3.08    0.455  0.146  1.20    1.13   75/ 5/13 17:41     3.32     0.063   0.138   3.12
               75/ 5/13 20:20                                           75/ 5/13 21: 0

  45   122     75/ 5/17  1:11      1.48    0.220  0.149  8.64    0.32   75/ 5/17  1:17     1.72     0.025   0.112   1.72
               75/ 5/17  2:40                                           75/ 5/17  3: 0

  46   122     75/ 5/17 15:30      4.38    0.905  0.206  4.25    1.25   75/ 5/17 16:18     3.63     0.213   0.235  19.61
               75/ 5/17 19:53                                           75/ 5/17 19:56

  47   123     75/ 6/17 11: 7      1.75    1.191  0.681  7.56    0.57   75/ 6/17 11:15     2.08     0.084   0.071   7.17
               75/ 6/17 12:52                                           75/ 6/17 13:20

       122     75/ 6/17 11: 7      1.58    1.285  0.811  6.27    0.57                                      0.066
               75/ 6/17 12:42

  48   123     75/ 6/19  7:33      1.20    0.080  0.066  1.18    0.58   75/ 6/19  7:48     0.57     0.002   0.022   0.19
               75/ 6/19  8:45                                           75/ 6/19  8:22

       122     75/ 6/19  7:30      0.25    0.133  0.533  1.57    0.63                                      0.013
               75/ 6/19  7:45

       121     75/ 6/19  7:34      0.82    0.121  0.148  1.91    0.57                                      0.015
               75/ 6/19  8:23

  49   123     75/ 6/24 15:32      2.40    0.989  0.412  2.45    0.70   75/ 6/24 15:44     1.92     0.047   0.047   2.37
               75/ 6/24 17:56                                           75/ 6/24 17:39

       122     75/ 6/24 15:32      2.45    0.991  0.405  3.23    0.70                                      0.047
               75/ 6/24 17:59

       121     75/ 6/24 15:32      2.47    0.871  0.353  2.55    0.70                                      0.054
               75/ 6/24 18: 0

  50   123     75/ 6/25 17:20      5.63    1.097  0.195  4.12    0.71   75/ 6/25 17:28     3.32     0.078   0.071   7.18
               75/ 6/25 22:58                                           75/ 6/25 20:47

       122     75/ 6/25 17:20      5.46    0.819  0.150  2.65    0.71                                      0.095
               75/ 6/25 22:48


                                      *** TABLE X - 28. ***
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SUMMARY OF EVENTS(CONTINUED)

CATCHMENT FILE : 15

BROWARD COUNTY, FLORIDA. RESIDENTIAL. (FL 1 1)

STORM SEWERED AREA CATCHMENT AREA 40.80 ACRES

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
50	121	75/ 6/25 17:20 75/ 6/25 22:51	5.52	0.859	0.156	4.61	0.71	75/ 6/25 17:28 75/ 6/25 20:47	3.32	0.078	0.090	7.18	
51	123	75/ 6/26 14:15 75/ 6/26 15:22	1.11	0.586	0.527	7.94	0.21	75/ 6/26 14:20 75/ 6/26 15:40	1.33	0.045	0.078	6.72	
	122	75/ 6/26 14:15 75/ 6/26 15:10	0.91	0.640	0.700	8.43	0.21				0.071		
	121	75/ 6/26 14:15 75/ 6/26 14:56	0.68	0.519	0.764	5.88	0.21				0.088		
52	123	75/ 7/ 4 14:45 75/ 7/ 4 15:58	1.21	0.458	0.377	1.86	0.68	75/ 7/ 4 14:59 75/ 7/ 4 17: 0	2.02	0.026	0.056	2.37	
	122	75/ 7/ 4 14:45 75/ 7/ 4 16:13	1.46	0.515	0.351	1.96	0.68				0.050		
	121	75/ 7/ 4 14:45 75/ 7/ 4 16:41	1.93	0.424	0.220	1.57	0.68				0.060		
53	123	75/ 7/ 5 5:20 75/ 7/ 5 7:56	2.60	0.230	0.086	3.14	0.37	75/ 7/ 5 5:34 75/ 7/ 5 6:47	1.21	0.007	0.030	0.89	
	122	75/ 7/ 5 5:20 75/ 7/ 5 7:58	2.63	0.216	0.082	2.35	0.37				0.032		
	121	75/ 7/ 5 5:20 75/ 7/ 5 7:54	2.57	0.234	0.091	2.94	0.37				0.030		
54	123	75/ 7/ 6 0: 7 75/ 7/ 6 1:31	1.40	0.501	0.357	3.92	0.55	75/ 7/ 6 0:17 75/ 7/ 6 2: 0	1.72	0.026	0.052	1.97	
	122	75/ 7/ 6 0: 4 75/ 7/ 6 1:47	1.71	0.538	0.313	2.84	0.60				0.049		
	121	75/ 7/ 6 0: 3 75/ 7/ 6 2: 0	1.95	0.531	0.272	1.96	0.62				0.049		
55	123	75/ 7/11 14:40 75/ 7/11 17:30	2.84	1.256	0.443	6.11	0.43	75/ 7/11 14:46 75/ 7/11 17:17	2.52	0.146	0.116	10.38	
	122	75/ 7/11 14:40 75/ 7/11 17:16	2.60	1.348	0.518	4.80	0.43				0.108		
	121	75/ 7/11 14:40 75/ 7/11 17:28	2.80	1.245	0.445	4.47	0.43				0.117		
56	123	75/ 7/13 6:21 75/ 7/13 7:38	1.29	0.300	0.234	8.72	0.33	75/ 7/13 6:27 75/ 7/13 7:32	1.08	0.010	0.033	1.05	
	122	75/ 7/13 6:21 75/ 7/13 7:51	1.50	0.250	0.166	4.51	0.33				0.039		

*** TABLE X - 28. ***

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                                         ****************************
                                         * SUMMARY OF EVENTS(CONTINUED) *
                                         ****************************
                                         *      CATCHMENT FILE : 15    *
                              ************************************************
                              * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.        (FL 1 1) *
                              ************************************************
                              *    STORM SEWERED AREA         CATCHMENT AREA   40.80 ACRES *
                              ************************************************


                              RAINFALL                                                 FLOW
                              --------                                                 ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)     DURATION    VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN     (HRS)       (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR IN/HR   HRS                                                   CFS
-----  ----  ---------------     --------  ------  ----  ----    ----- ---------------   --------    ------   ------   ----  ----


  56   121     75/ 7/13  6:20     0.23     0.256 1.091  4.61     0.35  75/ 7/13  6:27     1.08       0.010    0.038    1.05
               75/ 7/13  6:34                                          75/ 7/13  7:32

  57   123     75/ 7/14 12:29     0.73     0.259 0.352  2.45     0.40  75/ 7/14 12:35     0.92       0.010    0.038    0.96
               75/ 7/14 13:13                                          75/ 7/14 13:30

       122     75/ 7/14 12:29     1.27     0.270 0.212  2.16     0.40                                         0.037
               75/ 7/14 13:45

       121     75/ 7/14 12:29     1.47     0.233 0.159  2.45     0.40                                         0.043
               75/ 7/14 13:57

  58   123     75/ 7/14 22:18     0.13     0.008 0.058  0.20     0.29  75/ 7/14 22:22     1.14       0.011    1.365    1.05
               75/ 7/14 22:26                                          75/ 7/14 23:30

       122     75/ 7/14 22:16     0.35     0.216 0.621  3.92     0.32                                         0.049
               75/ 7/14 22:37

       121     75/ 7/14 22:10     1.09     0.217 0.200  3.43     0.42                                         0.048
               75/ 7/14 23:15

  59   123     75/ 7/15 13:49     0.36     0.014 0.038  0.49     0.07  75/ 7/15 13:42     1.30       0.016    1.177    2.10
               75/ 7/15 14:11                                          75/ 7/15 15: 0

       122     75/ 7/15 13:35     0.92     0.299 0.325  4.70     0.30                                         0.054
               75/ 7/15 14:30

       121     75/ 7/15 13:36     0.72     0.302 0.420  4.31     0.29                                         0.054
               75/ 7/15 14:19

  60   122     75/ 7/17  7: 4     0.80     0.340 0.427  1.67     0.52  75/ 7/17  7:20     1.08       0.020    0.057    1.37
               75/ 7/17  7:52                                          75/ 7/17  8:25

  61   122     75/ 7/18  7:30     1.23     0.331 0.269  2.94     0.38  75/ 7/18  7:34     1.43       0.022    0.066    2.10
               75/ 7/18  8:44                                          75/ 7/18  9: 0

  62   122     75/ 7/19  5: 5     5.07     1.877 0.371  7.06     3.78  75/ 7/19  5:28     5.04       0.396    0.211   21.75
               75/ 7/19 10: 9                                          75/ 7/19 10:30

  63   123     75/ 7/31 10:45     1.55     0.372 0.241  4.61     0.23  75/ 7/31 10:51     1.65       0.028    0.075    3.28
               75/ 7/31 12:18                                          75/ 7/31 12:30

       122     75/ 7/31 10:45     1.43     0.293 0.205  6.67     0.23                                         0.095
               75/ 7/31 12:11

       121     75/ 7/31 10:45     1.58     0.479 0.303  8.43     0.23                                         0.058
               75/ 7/31 12:20

  64   123     75/ 8/ 1  0:23     1.18     0.309 0.261  4.81     0.21  75/ 8/ 1  0:26     1.57       0.029    0.093    4.13
               75/ 8/ 1  1:34                                          75/ 8/ 1  2: 0

       122     75/ 8/ 1  0:23     1.12     0.277 0.248  3.84     0.21                                         0.104
               75/ 8/ 1  1:30


                                          ***  TABLE X - 28. ***
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SUMMARY OF EVENTS(CONTINUED)
CATCHMENT FILE : 15
BROWARD COUNTY, FLORIDA. RESIDENTIAL. (FL 1 1)
STORM SEWERED AREA CATCHMENT AREA 40.80 ACRES

		RAINFALL							FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
64	121	75/ 8/ 1 0:22 75/ 8/ 1 1:40	1.30	0.318	0.245	7.05	0.23	75/ 8/ 1 0:26 75/ 8/ 1 2: 0	1.57	0.029	0.091	4.13	
65	123	75/ 8/16 8:55 75/ 8/16 9:32	0.62	0.220	0.357	2.45	0.32	75/ 8/16 8:58 75/ 8/16 10: 0	1.04	0.013	0.058	1.37	
	122	75/ 8/16 8:55 75/ 8/16 9:45	0.84	0.152	0.181	1.17	0.32				0.084		
	121	75/ 8/16 8:55 75/ 8/16 9:34	0.65	0.242	0.371	3.23	0.32				0.053		
66	123	75/ 8/12 9:13 75/ 8/12 10:30	1.29	0.230	0.179	2.45	0.30	75/ 8/12 9:19 75/ 8/12 10:30	1.18	0.011	0.048	1.15	
	122	75/ 8/12 9:15 75/ 8/12 10:30	1.25	0.268	0.214	4.61	0.27				0.041		
	121	75/ 8/12 9:13 75/ 8/12 10: 0	0.79	0.222	0.283	2.36	0.30				0.050		
67	123	75/ 8/21 11: 0 75/ 8/21 12:24	1.40	0.230	0.164	3.53	0.46	75/ 8/21 11:11 75/ 8/21 12:30	1.32	0.014	0.060	1.97	
	122	75/ 8/21 11: 2 75/ 8/21 11:20	0.30	0.207	0.687	2.51	0.43				0.067		
	121	75/ 8/21 11: 2 75/ 8/21 11:59	0.95	0.187	0.197	2.55	0.43				0.074		
68	123	75/ 8/23 15:37 75/ 8/23 17:56	2.32	1.006	0.434	4.51	0.82	75/ 8/23 15:44 75/ 8/23 17:58	2.23	0.065	0.065	4.31	
	122	75/ 8/23 15:38 75/ 8/23 18: 0	2.37	0.813	0.344	2.16	0.80				0.080		
	121	75/ 8/23 15:37 75/ 8/23 17:36	1.98	0.983	0.495	2.84	0.82				0.066		
69	123	75/ 9/ 7 16:34 75/ 9/ 7 17: 5	0.52	0.594	1.152	6.20	0.20	75/ 9/ 7 16:39 75/ 9/ 7 18: 0	1.35	0.027	0.045	3.78	
	122	75/ 9/ 7 16:34 75/ 9/ 7 17:56	1.36	0.530	0.389	8.43	0.20				0.050		
	121	75/ 9/ 7 16:34 75/ 9/ 7 17:51	1.28	0.465	0.363	6.57	0.20				0.057		
70	123	75/ 9/ 9 10:42 75/ 9/ 9 12: 0	1.30	0.573	0.440	4.61	0.37	75/ 9/ 9 10:48 75/ 9/ 9 12: 0	1.20	0.023	0.039	2.37	
	122	75/ 9/ 9 10:42 75/ 9/ 9 11:51	1.15	0.734	0.639	8.83	0.37				0.031		

*** TABLE X - 28. ***

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***********************************
* SUMMARY OF EVENTS(CONTINUED) *
***********************************
*         CATCHMENT FILE : 15    *
***********************************************************
* BROWARD COUNTY, FLORIDA.  RESIDENTIAL.          (FL 1 1) *
***********************************************************
*    STORM SEWERED AREA         CATCHMENT AREA   40.80 ACRES *
***********************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
70	121	75/ 9/ 9 10:42 75/ 9/ 9 11:32	0.83	0.734	0.882	14.11	0.37	75/ 9/ 9 10:48 75/ 9/ 9 12: 0	1.20	0.023	0.031	2.37	
71	123	75/ 9/17 14: 5 75/ 9/17 15:45	1.67	0.510	0.306	5.98	0.27	75/ 9/17 14:10 75/ 9/17 15:47	1.62	0.014	0.027	0.83	
	122	75/ 9/17 14: 5 75/ 9/17 15:57	1.87	0.574	0.308	6.07	0.27				0.024		
	121	75/ 9/17 14: 5 75/ 9/17 15:43	1.63	0.435	0.266	3.53	0.27				0.031		
72	123	75/ 9/18 14:20 75/ 9/18 23:57	9.62	4.332	0.450	11.17	4.52	75/ 9/18 14:30 75/ 9/18 24: 0	9.50	0.799	0.184	27.12	
	122	75/ 9/18 14:20 75/ 9/18 23:54	9.57	4.164	0.435	10.88	4.52				0.192		
	121	75/ 9/18 14:20 75/ 9/18 23:53	9.55	4.602	0.482	13.33	4.52				0.174		
73	123	75/ 9/26 21:37 75/ 9/26 23:29	1.87	0.666	0.357	4.41	0.32	75/ 9/26 21:39 75/ 9/26 23:44	2.08	0.083	0.125	8.34	
	122	75/ 9/26 21:37 75/ 9/26 23:28	1.85	0.789	0.426	5.00	0.32				0.105		
	121	75/ 9/26 21:37 75/ 9/26 23:47	2.17	0.749	0.345	4.86	0.32				0.111		
74	123	74/ 9/25 20: 4 74/ 9/26 1:51	5.78	1.181	0.204	2.82	4.65	74/ 9/25 20: 0 74/ 9/26 3: 0	7.00	0.216	0.183	14.36	
	122	74/ 9/25 20:11 74/ 9/26 2:41	6.50	1.283	0.197	4.80	4.54				0.169		
	121	74/ 9/25 20: 0 74/ 9/26 2: 1	6.02	1.683	0.280	5.98	4.71				0.129		

*** TABLE X - 28. ***

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                    ******************************
                    *     STATISTICAL SUMMARY    *
                    ******************************
                    *     CATCHMENT FILE : 15    *
    **********************************************************
    * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.          (FL 1 1) *
    **********************************************************
    *    STORM SEWERED AREA         CATCHMENT AREA   40.80 ACRES *
    **********************************************************
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	70 TURB JKSN JTU	80 COLOR PT-CO UNITS	95 CNDUCTVY AT 25C MICROMHO	310 BOD 5 DAY MG/L	340 COD HI LEVEL MG/L	500 RESIDUE TOTAL MG/L	515 RESIDUE DISS-105 C MG/L	600 TOTAL N N MG/L
MEAN..............................	13.300	19.900	75.000	6.780	22.000	98.300	70.300	1.430
STANDARD DEVIATION..............	6.020	19.600	44.400	4.220	23.800	64.600	54.100	1.370
COEF. OF VARIATION..............	0.454	0.983	0.592	0.623	1.082	0.657	0.769	0.959
PARAMETER RANGE								
MIN....................	3.000	5.000	34.000	1.900	2.000	9.000	9.000	0.290
MAX....................	70.000	160.000	350.000	19.600	250.000	625.000	574.000	11.500
# OF EVENTS.....................	31	29	31	21	31	31	31	31
TOTAL FLOW VOLUME(INCH)..........	0.820	0.810	0.777	0.371	0.818	0.820	0.820	0.820
TOTAL MASS LOAD(LBS)............	**********	**********	**********	23.200	167.000	745.000	533.000	10.800
CONCENTRATION(LBS/AC-IN)........	**********	**********	**********	1.540	4.990	22.300	15.900	0.324

	605 ORG N N MG/L	610 NH3-N TOTAL MG/L	615 NO2-N TOTAL MG/L	620 NO3-N TOTAL MG/L	665 PHOS-P P-WET MG/L	680 T ORG C C MG/L	685 T.INORG C MG/L	690 T-CARBON C MG/L
MEAN..............................	0.901	0.194	0.022	0.323	0.241	8.000	4.290	12.100
STANDARD DEVIATION..............	0.836	0.381	0.021	0.219	0.204	10.700	1.760	12.300
COEF. OF VARIATION..............	0.928	1.963	0.966	0.679	0.848	1.336	0.411	1.016
PARAMETER RANGE								
MIN....................	0.140	0.010	0.010	0.010	0.060	1.000	1.000	3.000
MAX....................	9.400	2.600	0.240	2.100	2.400	104.000	17.000	120.000
# OF EVENTS.....................	31	31	31	31	31	30	30	30
TOTAL FLOW VOLUME(INCH)..........	0.820	0.820	0.820	0.820	0.820	0.812	0.812	0.812
TOTAL MASS LOAD(LBS)............	6.830	1.470	0.166	2.450	1.830	60.100	32.200	91.100
CONCENTRATION(LBS/AC-IN)........	0.204	0.044	0.005	0.073	0.055	1.810	0.971	2.750

	940 CHLORIDE CL MG/L	1027 CADMIUM CD.TOT UG/L	1034 CHROMIUM CR.TOT UG/L	1042 COPPER CU.TOT UG/L	1045 IRON TOTAL UG/L	1051 LEAD PB.TOT UG/L	1092 ZINC ZN.TOT UG/L	31501 TOT COLI MFIMENDO LN/100ML
MEAN..............................	4.200	1.380	10.000	7.000	259.000	157.000	77.600	12.800
STANDARD DEVIATION..............	3.130	0.579	0.057	4.560	181.000	98.600	34.800	12.800
COEF. OF VARIATION..............	0.744	0.419	0.006	0.651	0.700	0.628	0.448	0.993
PARAMETER RANGE								
MIN....................	1.300	1.000	10.000	1.000	10.000	30.000	10.000	10.100
MAX....................	20.000	6.000	20.000	41.000	5300.000	1100.000	560.000	14.400
# OF EVENTS.....................	7	6	8	8	26	8	8	8
TOTAL FLOW VOLUME(INCH)..........	0.055	0.224	0.298	0.298	0.796	0.298	0.298	0.084
TOTAL MASS LOAD(LBS)............	2.150	0.003	0.028	0.019	1.910	0.432	0.213	27.800
CONCENTRATION(LBS/AC-IN)........	0.952	0.000	0.002	0.002	0.059	0.036	0.018	26.600

*** TABLE X - 29. ***

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                                        ****************************
                                        *    STATISTICAL SUMMARY   *
                                        ****************************
                                        *     CATCHMENT FILE : 15  *
                               ********************************************
                               * BROWARD COUNTY, FLORIDA.  RESIDENTIAL.          (FL 1 1) *
                               ********************************************
                               *   STORM SEWERED AREA        CATCHMENT AREA   40.80 ACRES *
                               ********************************************

                                 31616       31679       70299       70507
                                FEC COLI    FECSTREP    RES-SUSP    PHOS-T
                                MFM-FCBR    MF M-ENT    AT 180 C    ORTHO
                                LN/100ML    LN/100ML      MG/L      MG/L P
                                --------    --------    --------    --------
MEAN............................  10.700      10.800      28.300       0.167
STANDARD DEVIATION..............  10.800      10.100      16.600       0.151
COEF. OF VARIATION..............   1.077       0.503       0.586       0.907
PARAMETER RANGE
          MIN...................   6.910       8.520       1.000       0.030
          MAX...................  13.100      11.700     249.000       1.800
# OF EVENTS.....................       8           8          31          31
TOTAL FLOW VOLUME(INCH).........   0.084       0.084       0.820       0.820
TOTAL MASS LOAD(LBS)............  25.800      25.900     214.000       1.270
CONCENTRATION(LBS/AC-IN)........  24.500      24.700       6.410       0.038
```

*** TABLE X - 29. ***

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                                        *******************************
                                        *      SUMMARY OF EVENTS      *
                                        *******************************
                                        *     CATCHMENT FILE : 16     *
                        ***************************************************************
                        * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.          (FL 1 2) *
                        ***************************************************************
                        *   STORM SEWERED AREA          CATCHMENT AREA   58.30 ACRES *
                        ***************************************************************


                              RAINFALL                                          FLOW
                              --------                                          ----

EVENT RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME   RUNOFF  PEAK  DRY
      GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)   COEFF.  FLOW  DAYS
                                                 IN/HR IN/HR  HRS                                              CFS
----- ----  ---------------   --------  ------  ----  ----   ----- ---------------   --------  ------   ------  ----  ----


   1   123    75/ 4/15 14:17     2.22    0.072  0.032  1.27   0.60  75/ 4/15 14:21      2.15     0.008    0.117   0.47
              75/ 4/15 16:30                                        75/ 4/15 16:30

   2   123    75/ 5/ 5 19:31     2.25    0.230  0.102  1.66   0.27  75/ 5/ 5 19:39      2.30     0.007    0.030   0.32
              75/ 5/ 5 21:46                                        75/ 5/ 5 21:57

       122    75/ 5/ 5 19:30     1.85    0.242  0.131  1.91   0.28                                        0.028
              75/ 5/ 5 21:21

   3   123    75/ 5/ 9 17:17     3.58    0.340  0.095  1.11   0.47  75/ 5/ 9 17:32      3.42     0.005    0.016   0.32
              75/ 5/ 9 20:52                                        75/ 5/ 9 20:57

       122    75/ 5/ 9 17:15     3.75    0.439  0.117  2.03   0.50                                        0.012
              75/ 5/ 9 21: 0

   4   123    75/ 5/10 14:53     2.82    1.355  0.481  8.94   0.47  75/ 5/10 15: 1      2.50     0.002    0.002   0.19
              75/ 5/10 17:42                                        75/ 5/10 17:31

   5   123    75/ 5/13 17: 0     2.58    0.634  0.245  1.39   0.55  75/ 5/13 17:23      2.62     0.008    0.013   0.53
              75/ 5/13 19:35                                        75/ 5/13 20: 0

   6   123    75/ 5/22  9:50     1.17    0.121  0.104  0.65   0.68  75/ 5/22 10: 0      1.33     0.011    0.089   0.88
              75/ 5/22 11: 0                                        75/ 5/22 11:20

       122    75/ 5/22  9:50     1.43    0.096  0.067  0.46   0.68                                        0.112
              75/ 5/22 11:16

   7   123    75/ 5/28 12: 1     1.25    0.167  0.134  3.14   0.25  75/ 5/28 12: 5      1.92     0.030    0.180   4.56
              75/ 5/28 13:16                                        75/ 5/28 14: 0

       122    75/ 5/28 12: 1     1.33    0.652  0.489  4.64   0.25                                        0.046
              75/ 5/28 13:21

   8   123    75/ 5/29 13:30     2.10    0.882  0.420  7.75   0.28  75/ 5/29 13:35      2.42     0.052    0.059   4.72
              75/ 5/29 15:36                                        75/ 5/29 16: 0

   9   123    75/ 7/11 14:53     2.87    0.248  0.087  1.57   0.25  75/ 7/11 14:56      3.07     0.045    0.182   2.20
              75/ 7/11 17:45                                        75/ 7/11 18: 0

       122    75/ 7/11 14:50     3.12    0.314  0.101  2.36   0.30                                        0.144
              75/ 7/11 17:57

  10   123    75/ 7/14 12:35     0.88    0.211  0.239  2.84   0.18  75/ 7/14 12:37      1.89     0.029    0.138   3.65
              75/ 7/14 13:28                                        75/ 7/14 14:30

       122    75/ 7/14 12:35     1.67    0.247  0.148  5.68   0.18                                        0.118
              75/ 7/14 14:15

  11   123    75/ 7/16  1:32     1.17    0.172  0.147  3.62   0.15  75/ 7/16  1:35      1.53     0.009    0.050   1.98
              75/ 7/16  2:42                                        75/ 7/16  3: 7

       122    75/ 7/16  1:31     1.83    0.233  0.127  4.12   0.16                                        0.037
              75/ 7/16  3:21


                                        *** TABLE X - 30. ***
```

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                    **********************************
                    * SUMMARY OF EVENTS(CONTINUED) *
                    **********************************
                    *        CATCHMENT FILE : 16     *
*********************************************************************
* BROWARD COUNTY, FLORIDA.  TRANSPORTATION.            (FL 1 2) *
*********************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA    58.30 ACRES *
*********************************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
12	123	75/ 7/16 12:40 75/ 7/16 14: 2	1.37	0.231	0.169	5.20	0.23	75/ 7/16 12:47 75/ 7/16 14:30	1.72	0.019	0.081	1.76	
	122	75/ 7/16 12:41 75/ 7/16 13:43	1.04	0.193	0.186	2.05	0.22				0.097		
13	123	75/ 8/ 1 0:28 75/ 8/ 1 1:16	0.80	0.225	0.281	3.82	0.23	75/ 8/ 1 0:31 75/ 8/ 1 2:30	1.98	0.055	0.244	11.32	
	122	75/ 8/ 1 0:27 75/ 8/ 1 1:25	0.96	0.303	0.314	6.47	0.25				0.181		
14	123	75/ 8/ 4 1: 1 75/ 8/ 4 4:55	3.90	0.810	0.208	6.07	1.88	75/ 8/ 4 1: 2 75/ 8/ 4 5: 0	3.97	0.098	0.121	6.46	
15	123	75/ 8/ 7 8:30 75/ 8/ 7 9:45	1.25	0.243	0.195	3.60	0.15	75/ 8/ 7 8:33 75/ 8/ 7 10: 0	1.45	0.013	0.054	2.20	
	122	75/ 8/ 7 8:30 75/ 8/ 7 8:37	0.11	0.124	1.095	3.23	0.15				0.107		
16	123	75/ 8/16 6:26 75/ 8/16 6:55	0.48	0.283	0.585	2.74	0.30	75/ 8/16 6:29 75/ 8/16 8:30	2.02	0.051	0.182	6.84	
	122	75/ 8/16 6:26 75/ 8/16 8:27	2.02	0.250	0.124	2.84	0.30				0.206		
17	123	75/ 8/20 21:42 75/ 8/20 23:28	1.77	0.305	0.173	4.80	0.35	75/ 8/20 21:48 75/ 8/20 24: 0	2.20	0.031	0.103	3.65	
	122	75/ 8/20 21:42 75/ 8/20 22:20	0.63	0.253	0.399	3.14	0.35				0.124		
18	123	75/ 8/21 9:20 75/ 8/21 12: 1	2.68	0.576	0.215	3.43	2.18	75/ 8/21 9:24 75/ 8/21 13: 0	3.60	0.071	0.123	7.03	
	122	75/ 8/21 9:20 75/ 8/21 11:25	2.08	0.482	0.232	3.83	2.18				0.146		
19	123	75/ 8/23 15:47 75/ 8/23 18:32	2.75	1.202	0.437	9.02	0.35	75/ 8/23 15:50 75/ 8/23 19: 0	3.17	0.202	0.168	18.74	
	122	75/ 8/23 15:47 75/ 8/23 18:38	2.85	1.251	0.439	10.39	0.35				0.161		
20	123	75/ 8/29 4:34 75/ 8/29 6:55	2.35	0.274	0.117	2.25	0.32	75/ 8/29 4:37 75/ 8/29 6:41	2.07	0.038	0.140	5.05	
	122	75/ 8/29 4:34 75/ 8/29 6:55	2.35	0.277	0.118	2.20	0.32				0.138		
21	123	75/ 9/ 7 16:45 75/ 9/ 7 18:45	2.00	0.629	0.315	5.39	0.21	75/ 9/ 7 16:48 75/ 9/ 7 18:45	1.95	0.076	0.121	10.16	

*** TABLE X - 30. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 16 *

* BROWARD COUNTY, FLORIDA. TRANSPORTATION. (FL 1 2) *

* STORM SEWERED AREA CATCHMENT AREA 58.30 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
21	122	75/ 9/ 7 16:45 75/ 9/ 7 18:15	1.50	0.663	0.442	8.72	0.21	75/ 9/ 7 16:48 75/ 9/ 7 18:45	1.95	0.076	0.115	10.16	
22	123	75/ 9/ 9 9: 8 75/ 9/ 9 13: 0	3.87	0.433	0.112	4.61	1.82	75/ 9/ 9 9: 9 75/ 9/ 9 13: 0	3.85	0.062	0.144	7.61	
	122	75/ 9/ 9 9: 8 75/ 9/ 9 12:24	3.27	0.527	0.161	5.98	1.82				0.118		
23	123	75/ 9/17 14:11 75/ 9/17 16:41	2.50	0.415	0.166	2.35	0.37	75/ 9/17 14:18 75/ 9/17 16:58	2.67	0.090	0.217	8.64	
	122	75/ 9/17 14:10 75/ 9/17 15:12	1.04	0.498	0.481	2.84	0.38				0.181		
24	123	75/ 9/18 13:35 75/ 9/18 21:26	7.85	4.387	0.559	9.72	2.80	75/ 9/18 13:40 75/ 9/18 22: 0	8.34	0.194	0.044	6.09	
	122	75/ 9/18 13:36 75/ 9/18 21:56	8.33	4.329	0.520	7.55	2.79				0.045		
25	123	75/10/ 3 22:55 75/10/ 4 1:41	2.77	0.257	0.093	2.16	0.70	75/10/ 3 23: 3 75/10/ 4 2: 0	2.95	0.019	0.075	0.81	
	122	75/10/ 3 22:53 75/10/ 4 1:40	2.78	0.199	0.072	1.27	0.73				0.097		
26	123	75/10/14 13:15 75/10/14 16: 0	2.75	0.548	0.199	6.67	0.25	75/10/14 13:17 75/10/14 15: 7	1.83	0.043	0.078	4.88	
	122	75/10/14 13:15 75/10/14 15:31	2.27	0.571	0.252	5.10	0.25				0.075		
27	123	75/10/18 8:42 75/10/18 8:58	0.27	0.331	1.245	3.24	0.28	75/10/18 8:45 75/10/18 11: 0	2.25	0.014	0.042	0.81	
	122	75/10/18 8:42 75/10/18 8:58	0.27	0.366	1.378	2.84	0.28				0.038		
28	123	75/10/19 18:37 75/10/19 21: 0	2.39	0.182	0.076	2.94	0.48	75/10/19 18:39 75/10/19 21: 0	2.35	0.020	0.108	1.20	
	122	75/10/19 18:36 75/10/19 20:55	2.32	0.240	0.104	1.76	0.50				0.082		
29	123	75/10/22 9:15 75/10/22 10:30	1.25	0.337	0.270	4.12	0.21	75/10/22 9:17 75/10/22 11: 0	1.72	0.029	0.086	3.22	
	122	75/10/22 9:15 75/10/22 10:38	1.38	0.406	0.293	3.24	0.21				0.071		
30	123	75/10/29 14:50 75/10/29 20: 0	5.17	0.381	0.074	1.77	1.46	75/10/29 15:56 75/10/29 20: 0	4.07	0.045	0.117	5.39	

*** TABLE X - 30. ***

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                    ******************************
                    * SUMMARY OF EVENTS(CONTINUED) *
                    ******************************
                    *       CATCHMENT FILE : 16   *
       *****************************************************
       * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.     (FL 1 2) *
       *****************************************************
       *    STORM SEWERED AREA         CATCHMENT AREA   58.30 ACRES *
       *****************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
30	122	75/10/29 14:49 75/10/29 19:46	4.95	0.414	0.084	2.26	1.48	75/10/29 15:56 75/10/25 20: 0	4.07	0.045	0.108	5.39	
31	123	75/10/31 6:13 75/10/31 7:28	1.25	0.409	0.327	4.12	0.32	75/10/31 6:15 75/10/31 8: 0	1.75	0.051	0.125	5.22	
	122	75/10/31 6:13 75/10/31 7:21	1.13	0.369	0.326	3.63	0.32				0.139		
32	123	75/10/31 10:50 75/10/31 12:58	2.13	0.531	0.249	4.86	0.23	75/10/31 10:52 75/10/31 12:36	1.73	0.083	0.156	9.06	
	122	75/10/31 10:50 75/10/31 12:53	2.05	0.570	0.278	6.19	0.23				0.145		
33	123	75/11/ 4 5: 9 75/11/ 4 7:30	2.35	0.576	0.245	5.79	0.27	75/11/ 4 5:18 75/11/ 4 7:30	2.20	0.037	0.065	2.69	
	122	75/11/ 4 5:10 75/11/ 4 6:28	1.30	0.588	0.452	5.68	0.25				0.063		
34	123	75/11/ 4 12: 8 75/11/ 4 14:53	2.75	0.283	0.103	1.18	0.45	75/11/ 4 12: 7 75/11/ 4 15: 0	2.89	0.041	0.146	3.22	
	122	75/11/ 4 12: 6 75/11/ 4 14:58	2.87	0.312	0.109	1.18	0.48				0.132		
35	123	75/11/20 4:12 75/11/20 9:20	5.13	0.478	0.093	0.59	5.13	75/11/20 4:25 75/11/20 9:20	4.92	0.034	0.072	0.64	
	122	75/11/20 4:15 75/11/20 9:20	5.08	0.493	0.097	0.59	5.08				0.069		
36	123	76/ 1/ 5 8:46 76/ 1/ 5 10:22	1.60	0.276	0.172	0.92	1.40	76/ 1/ 5 8:55 76/ 1/ 5 12: 0	3.08	0.057	0.205	5.05	
	122	76/ 1/ 5 8:51 76/ 1/ 5 11:34	2.72	0.332	0.122	0.92	1.32				0.170		
37	123	76/ 1/ 5 16:16 76/ 1/ 5 20:51	4.58	0.392	0.086	0.55	2.98	76/ 1/ 5 16:29 76/ 1/ 5 21: 0	4.52	0.059	0.150	1.41	
	122	76/ 1/ 5 16:18 76/ 1/ 5 20:52	4.57	0.447	0.098	0.46	2.95				0.132		
38	123	76/ 5/ 3 11:12 76/ 5/ 3 14:36	3.40	0.294	0.086	0.64	2.13	76/ 5/ 3 11:24 76/ 5/ 3 15: 0	3.60	0.041	0.140	1.41	
39	123	76/ 5/15 20:40 76/ 5/16 0: 5	3.42	0.631	0.185	1.20	0.52	76/ 5/15 20:47 76/ 5/16 2: 0	5.22	0.134	0.212	5.56	
40	123	76/ 5/17 13:19 76/ 5/17 15:59	2.67	0.308	0.115	1.39	0.38	76/ 5/17 13:21 76/ 5/17 16: 0	2.65	0.057	0.187	4.72	

*** TABLE X - 30. ***

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                    ********************************
                    * SUMMARY OF EVENTS(CONTINUED) *
                    ********************************
                    *       CATCHMENT FILE : 16    *
          ********************************************************
          * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.     (FL 1 2) *
          ********************************************************
          *    STORM SEWERED AREA       CATCHMENT AREA   58.30 ACRES *
          ********************************************************
```

		RAINFALL							FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
41	123	76/ 5/21 11:30 76/ 5/21 14:55	3.42	0.637	0.186	5.08	1.45	76/ 5/21 11:44 76/ 5/21 15: 0	3.27	0.134	0.211	17.59	
42	123	76/ 5/22 1:10 76/ 5/22 5:57	4.78	0.542	0.113	2.22	2.82	76/ 5/22 1:26 76/ 5/22 6: 0	4.57	0.096	0.176	9.72	
43	123	76/ 5/23 11:20 76/ 5/23 16:25	5.08	0.831	0.164	5.72	4.27	76/ 5/23 11:25 76/ 5/23 16:33	5.13	0.162	0.195	14.04	
44	123	76/ 5/28 16: 0 76/ 5/28 22:56	6.93	2.254	0.325	8.40	0.62	76/ 5/28 16: 8 76/ 5/28 23: 0	6.87	0.365	0.162	23.69	
	122	76/ 5/28 16: 0 76/ 5/28 22:59	6.98	1.937	0.277	8.21	0.62				0.189		
45	123	76/ 5/29 16:45 76/ 5/29 19:14	2.48	2.041	0.822	6.73	0.53	76/ 5/29 16:55 76/ 5/29 20: 0	3.08	0.482	0.236	36.99	
	122	76/ 5/29 16:45 76/ 5/29 19:34	2.82	2.049	0.727	6.09	0.53				0.235		
46	123	76/ 5/29 21:55 76/ 5/30 1: 0	3.08	0.508	0.165	1.48	0.92	76/ 5/29 22: 2 76/ 5/30 1: 0	2.97	0.088	0.172	7.22	
	122	76/ 5/29 21:55 76/ 5/30 0:58	3.05	0.525	0.172	1.36	0.92				0.167		
47	123	76/ 6/ 4 23:10 76/ 6/ 5 1:44	2.57	0.386	0.150	1.01	0.67	76/ 6/ 4 23:13 76/ 6/ 5 2: 0	2.78	0.088	0.227	8.64	
	122	76/ 6/ 4 23:10 76/ 6/ 5 1:45	2.58	0.395	0.153	1.30	0.67				0.222		
48	123	76/ 6/ 7 22:14 76/ 6/ 8 0:36	2.37	0.648	0.274	4.55	0.35	76/ 6/ 7 22:17 76/ 6/ 8 2: 0	3.72	0.137	0.211	11.79	
	122	76/ 6/ 7 22:14 76/ 6/ 8 1:30	3.27	0.668	0.204	2.86	0.35				0.205		
49	123	76/ 6/10 14:30 76/ 6/10 17:52	3.37	0.256	0.076	1.66	1.92	76/ 6/10 15:39 76/ 6/10 18: 0	2.35	0.031	0.120	1.34	
	122	76/ 6/10 14:32 76/ 6/10 17:50	3.30	0.190	0.058	0.92	1.88				0.161		
50	123	76/ 6/10 20:41 76/ 6/11 3:43	7.03	0.841	0.120	1.73	6.42	76/ 6/10 20:49 76/ 6/11 4:15	7.43	0.152	0.181	8.43	
	122	76/ 6/10 20:36 76/ 6/11 3:54	7.30	0.831	0.114	1.20	6.50				0.183		
51	123	76/ 6/11 10:35 76/ 6/11 19:52	9.28	0.825	0.089	6.37	7.72	76/ 6/11 10:41 76/ 6/11 20: 0	9.32	0.191	0.232	35.43	

*** TABLE X - 30. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 16 *

* BROWARD COUNTY, FLORIDA. TRANSPORTATION. (FL 1 2) *

* STORM SEWERED AREA CATCHMENT AREA 58.30 ACRES *

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
52	123	76/ 6/16 10:48 76/ 6/16 12: 7	1.32	0.052	0.040	1.00	0.43	76/ 6/16 10:57 76/ 6/16 12:26	1.48	0.011	0.215	1.34	
	122	76/ 6/16 10:48 76/ 6/16 12: 3	1.25	0.101	0.081	3.45	0.43				0.111		
53	123	76/ 6/17 20:45 76/ 6/17 22:52	2.12	0.312	0.148	1.09	0.75	76/ 6/17 20:53 76/ 6/17 22:55	2.03	0.027	0.088	2.57	
	122	76/ 6/17 20:45 76/ 6/17 22:54	2.15	0.268	0.125	2.31	0.75				0.103		
54	123	76/ 6/19 11:16 76/ 6/19 15: 7	3.85	1.400	0.364	5.78	1.82	76/ 6/19 11:19 76/ 6/19 15:45	4.43	0.269	0.192	9.72	
	122	76/ 6/19 11:16 76/ 6/19 15: 7	3.85	1.338	0.348	5.09	1.82				0.201		
55	123	76/ 6/23 8: 6 76/ 6/23 13:50	5.73	0.968	0.169	4.81	0.20	76/ 6/23 8: 8 76/ 6/23 14: 0	5.87	0.202	0.209	13.53	
	122	76/ 6/23 8: 6 76/ 6/23 13:44	5.63	0.943	0.167	4.90	0.20				0.214		
56	123	76/ 6/23 21:25 76/ 6/24 2:57	5.54	1.285	0.232	3.04	4.10	76/ 6/23 21:31 76/ 6/24 4: 0	6.48	0.187	0.146	14.57	
	122	76/ 6/23 21:25 76/ 6/24 3:55	6.50	1.077	0.166	2.25	4.10				0.174		
57	123	76/ 6/25 4: 0 76/ 6/25 9: 0	5.00	0.628	0.126	3.23	1.93	76/ 6/25 4: 0 76/ 6/25 9: 0	5.00	0.086	0.138	8.43	
	122	76/ 6/25 4: 5 76/ 6/25 8:37	4.53	0.553	0.122	2.55	1.85				0.156		
58	123	76/ 6/27 2:36 76/ 6/27 4:37	2.02	0.205	0.102	1.17	0.90	76/ 6/27 2:36 76/ 6/27 5:30	2.90	0.087	0.424	9.50	
59	123	76/ 7/ 6 18: 4 76/ 7/ 6 19:28	1.40	0.188	0.135	1.08	0.66	76/ 7/ 6 18:10 76/ 7/ 6 20:30	2.34	0.018	0.095	1.41	
60	123	76/ 7/ 7 13:59 76/ 7/ 7 16: 1	2.04	0.531	0.261	6.07	0.20	76/ 7/ 7 14: 0 76/ 7/ 7 17:30	3.50	0.160	0.301	24.34	
61	123	76/ 7/13 16:17 76/ 7/13 18:58	2.68	0.132	0.049	1.08	0.55	76/ 7/13 16:19 76/ 7/13 19: 0	2.68	0.026	0.195	1.41	
62	123	76/ 7/22 10:47 76/ 7/22 13: 0	2.22	1.929	0.870	5.78	1.55	76/ 7/22 10:49 76/ 7/22 14: 0	3.18	0.245	0.127	14.83	
63	123	76/ 8/16 17:40 76/ 8/16 21:53	4.22	1.392	0.330	8.24	0.48	76/ 8/16 17:46 76/ 8/16 22: 0	4.23	0.325	0.234	43.09	

*** TABLE X - 30. ***

```
                                        ***********************************
                                        * SUMMARY OF EVENTS(CONTINUED) *
                                        ***********************************
                                        *        CATCHMENT FILE : 16     *
                                ************************************************************
                                * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.         (FL 1 2) *
                                ************************************************************
                                *    STORM SEWERED AREA          CATCHMENT AREA   58.30 ACRES *
                                ************************************************************


                                  RAINFALL                                            FLOW
                                  --------                                            ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME   AVG   PEAK   BASIN DATE(START-END)    DURATION    VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)   RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)       (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR IN/HR  HRS                                                     CFS
-----  ----  ---------------     --------  ------   ----  ----   ----- ---------------    --------    ------   ------   ----  ----

  64   123     76/ 8/18 12:10     5.55     0.570  0.103  2.65    0.43  76/ 8/18 12:16      5.33       0.108    0.190    7.61
               76/ 8/18 17:43                                          76/ 8/18 17:36

  65   123     76/ 8/18 23: 4     9.23     1.456  0.158  4.31    0.46  76/ 8/18 23:18      9.20       0.234    0.161   12.77
               76/ 8/19  8:18                                          76/ 8/19  8:30

  66   123     76/ 8/20 12:30     2.40     0.465  0.194  9.61    0.23  76/ 8/20 12:30      2.50       0.126    0.271   24.67
               76/ 8/20 14:54                                          76/ 8/20 15: 0

  67   123     76/ 9/ 1 10: 6     4.75     0.541  0.114  2.25    2.92  76/ 9/ 1 10: 8      4.87       0.110    0.204    7.81
               76/ 9/ 1 14:51                                          76/ 9/ 1 15: 0

  68   123     76/ 9/ 8  8:53     2.12     0.354  0.167  3.29    0.25  76/ 9/ 8  8:55      2.09       0.045    0.127    7.81
               76/ 9/ 8 11: 0                                          76/ 9/ 8 11: 0

  69   123     76/ 9/12  6:31     1.25     2.300  1.840  9.61    0.30  76/ 9/12  6:39      2.45       0.470    0.204   53.67
               76/ 9/12  7:46                                          76/ 9/12  9: 6

  70   123     76/ 9/12 18:20     3.67     0.796  0.217  3.72    0.30  76/ 9/12 18:24      3.60       0.125    0.156    7.81
               76/ 9/12 22: 0                                          76/ 9/12 22: 0

  71   123     76/ 9/23 14:40     0.82     0.341  0.418  3.92    0.43  76/ 9/23 14:40      2.34       0.065    0.192    9.28
               76/ 9/23 15:29                                          76/ 9/23 17: 0

  72   123     76/10/ 9 13:35     2.42     0.377  0.156  4.63    0.32  76/10/ 9 13:36      2.40       0.090    0.238   14.83
               76/10/ 9 16: 0                                          76/10/ 9 16: 0

  73   123     76/10/10 22: 0     8.73     2.429  0.278  5.49    5.16  76/10/10 22: 9      8.85       0.559    0.230   34.28
               76/10/11  6:44                                          76/10/11  7: 0

  74   123     76/10/18 15:47     5.08     0.590  0.116  2.05    2.27  76/10/18 15:49      5.18       0.178    0.302   22.09
               76/10/18 20:52                                          76/10/18 21: 0

  75   123     76/11/ 2 21: 6     8.93     2.424  0.271  2.36    6.88  76/11/ 2 21: 5      9.42       0.595    0.245   18.16
               76/11/ 3  6: 2                                          76/11/ 3  6:30

  76   123     76/11/17  3:59     2.97     1.073  0.362  3.43    0.55  76/11/17  4:11      2.82       0.244    0.228   29.48
               76/11/17  6:57                                          76/11/17  7: 0

  77   123     76/12/ 1 10:20     5.38     0.502  0.093  0.59    0.63  76/12/ 1 10:20      5.67       0.118    0.236    2.57
               76/12/ 1 15:43                                          76/12/ 1 16: 0

  78   123     76/12/ 6  2:40     3.32     0.254  0.077  0.59    1.87  76/12/ 6  2:56      3.07       0.065    0.257    4.09
               76/12/ 6  5:59                                          76/12/ 6  6: 0

  79   123     76/12/ 6  7:30     3.46     0.320  0.092  2.75    1.55  76/12/ 6  7:30      3.46       0.080    0.250    8.43
               76/12/ 6 10:58                                          76/12/ 6 10:58

  80   123     76/12/13 19:30     5.27     2.510  0.477 11.47    0.45  76/12/13 19:46      6.23       0.499    0.199   37.78
               76/12/14  0:46                                          76/12/14  2: 0

  81   123     76/12/21  1:50     4.10     0.262  0.064  0.49    1.35  76/12/21  2:12      3.28       0.039    0.150    2.44
               76/12/21  5:56                                          76/12/21  5:29


                                        ***  TABLE X - 30. ***
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* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 16 *

* BROWARD COUNTY, FLORIDA. TRANSPORTATION. (FL 1 2) *

* STORM SEWERED AREA CATCHMENT AREA 58.30 ACRES *

			RAINFALL					FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
82	123	76/12/23 17: 0 76/12/24 1:57	8.95	0.591	0.066	0.88	5.23	76/12/23 17:19 76/12/24 2: 0	8.68	0.130	0.221	1.45	
83	123	76/12/25 7:36 76/12/25 12:44	5.13	0.219	0.043	1.57	2.62	76/12/25 7:58 76/12/25 13: 0	5.04	0.039	0.178	2.09	
84	123	77/ 1/15 9: 0 77/ 1/15 16:30	7.50	1.830	0.244	5.54	3.68	77/ 1/15 9: 0 77/ 1/15 16:30	7.50	0.397	0.217	22.73	
85	123	77/ 2/ 8 6:40 77/ 2/ 8 14:48	8.13	0.718	0.088	2.09	6.13	77/ 2/ 8 6:40 77/ 2/ 8 14:50	8.17	0.163	0.227	8.64	
86	123	77/ 2/14 13:42 77/ 2/14 16:39	2.95	0.329	0.112	1.20	0.53	77/ 2/14 13:50 77/ 2/14 17: 0	3.17	0.058	0.177	4.09	
87	123	77/ 4/10 16:40 77/ 4/10 20:59	4.32	0.326	0.076	1.20	2.67	77/ 4/10 16:52 77/ 4/10 20:43	3.85	0.052	0.161	4.40	
88	123	77/ 4/12 17:35 77/ 4/12 19:46	2.18	0.277	0.127	1.02	1.03	77/ 4/12 17:56 77/ 4/12 20:23	2.45	0.030	0.109	2.95	
89	123	77/ 4/13 14: 1 77/ 4/13 19: 0	4.98	1.144	0.230	2.40	2.68	77/ 4/13 14: 7 77/ 4/13 19: 3	4.93	0.170	0.149	12.04	
90	123	77/ 4/24 6:10 77/ 4/24 7:25	1.25	0.164	0.131	2.12	0.77	77/ 4/24 6:37 77/ 4/24 8: 2	1.42	0.016	0.098	2.09	
91	123	77/ 5/ 4 11:10 77/ 5/ 4 19:18	8.13	2.081	0.256	2.40	4.07	77/ 5/ 4 11:38 77/ 5/ 4 19:30	7.87	0.382	0.184	17.87	
92	123	77/ 5/ 5 4:35 77/ 5/ 5 6:59	2.40	1.404	0.585	8.31	1.32	77/ 5/ 5 4:52 77/ 5/ 5 7: 0	2.13	0.274	0.195	39.38	
93	123	77/ 5/ 9 17:30 77/ 5/ 9 20:50	3.33	0.881	0.264	6.18	1.78	77/ 5/ 9 17:43 77/ 5/ 9 21:18	3.58	0.138	0.157	15.36	
94	123	77/ 5/10 12:45 77/ 5/10 17:28	4.72	1.046	0.222	8.21	2.40	77/ 5/10 14:54 77/ 5/10 17:34	2.67	0.190	0.181	32.40	
95	123	77/ 5/12 21:45 77/ 5/12 22:52	1.12	0.678	0.608	2.49	0.98	77/ 5/12 21:58 77/ 5/12 24: 0	2.03	0.113	0.166	13.78	
96	123	77/ 5/25 21:15 77/ 5/25 23:41	2.43	0.335	0.138	2.95	0.72	77/ 5/25 21:20 77/ 5/25 23:57	2.62	0.048	0.142	8.02	
97	123	77/ 5/27 14:22 77/ 5/27 17:35	3.22	1.534	0.477	7.10	1.55	77/ 5/27 14:46 77/ 5/27 18: 0	3.23	0.322	0.210	36.60	
98	123	77/ 5/29 16: 1 77/ 5/29 18:49	2.80	1.081	0.386	6.46	0.97	77/ 5/29 16: 7 77/ 5/29 18:57	2.83	0.318	0.294	57.29	
99	123	77/ 6/ 1 16: 0 77/ 6/ 2 1:25	9.42	1.481	0.157	4.70	0.87	77/ 6/ 1 16:31 77/ 6/ 2 1:30	8.98	0.283	0.191	22.41	

*** TABLE X - 30. ***

```
                                          ********************************
                                          * SUMMARY OF EVENTS(CONTINUED) *
                                          ********************************
                                          *        CATCHMENT FILE : 16   *
                              ****************************************************************
                              * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.           (FL 1 2) *
                              ****************************************************************
                              *    STORM SEWERED AREA          CATCHMENT AREA   58.30 ACRES *
                              ****************************************************************


                                      RAINFALL                                                 FLOW
                                      --------                                                 ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)     DURATION    VOLUME    RUNOFF    PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN     (HRS)       (INCH)    COEFF.    FLOW  DAYS
                                                   IN/HR IN/HR   HRS                                                       CFS
-----  ----  ---------------     --------  ------  ----- ----    ----- ---------------     --------    ------    ------    ----  ----


 100   123     77/ 6/ 2 11:45     4.33     1.149  0.265  1.75    2.28  77/ 6/ 2 11:45       4.75      0.200     0.174     9.28
               77/ 6/ 2 16: 5                                          77/ 6/ 2 16:30

 101   123     77/ 6/ 3 11:10     3.18     0.354  0.111  1.45    0.55  77/ 6/ 3 11:16       3.23      0.051     0.143     2.20
               77/ 6/ 3 14:21                                          77/ 6/ 3 14:30

 102   123     77/ 6/ 8 17:10     1.77     0.274  0.155  2.40    0.38  77/ 6/ 8 17:16       1.73      0.064     0.234    12.04
               77/ 6/ 8 18:56                                          77/ 6/ 8 19: 0

 103   123     77/ 6/ 9 12:10     5.12     1.540  0.301  5.16    3.27  77/ 6/ 9 12:10       5.17      0.282     0.183    17.02
               77/ 6/ 9 17:17                                          77/ 6/ 9 17:20

 104   123     77/ 6/ 9 17:21     6.63     2.106  0.317  2.95    1.58  77/ 6/ 9 17:20       7.67      0.426     0.203    11.55
               77/ 6/ 9 23:59                                          77/ 6/10  1: 0

 105   123     77/ 7/ 1  8:48     2.04     0.302  0.148  2.27    0.29  77/ 7/ 1  8:51       1.98      0.064     0.213     7.81
               77/ 7/ 1 10:50                                          77/ 7/ 1 10:50

 106   123     76/ 8/19  8:30     8.50     1.018  0.120  1.38    3.08  76/ 8/19  8:30       8.50      0.210     0.206     5.39
               76/ 8/19 17: 0                                          76/ 8/19 17: 0

 107   123     76/12/24  2: 0     7.68     0.478  0.062  0.55    3.33  76/12/24  2: 0       8.00      0.118     0.246     2.82
               76/12/24  9:41                                          76/12/24 10: 0

 108   123     77/ 4/13 19:45     6.23     3.024  0.485 13.28    0.93  77/ 4/13 20: 4       5.93      0.770     0.255    96.22
               77/ 4/14  1:59                                          77/ 4/14  2: 0
```

*** TABLE X - 30. ***

```
                                                  ******************************
                                                  *     STATISTICAL SUMMARY    *
                                                  ******************************
                                                  *     CATCHMENT FILE : 16    *
                                    ************************************************************
                                    * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.        (FL 1 2) *
                                    ************************************************************
                                    *   STORM SEWERED AREA        CATCHMENT AREA   58.30 ACRES *
                                    ************************************************************

                                           70          80          95         310         335         340         500         515
                                          TURB       COLOR     CNDUCTVY       BOD         COD         COD      RESIDUE     RESIDUE
                                          JKSN       PT-CO      AT 25C       5 DAY     LOWLEVEL    HI LEVEL     TOTAL     DISS-105
                                          JTU        UNITS     MICROMHO      MG/L        MG/L        MG/L        MG/L      C MG/L
                                       --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................       10.300      17.200      71.600       6.140      26.900      37.100      80.900      66.500
STANDARD DEVIATION................        6.590      13.900      32.300       2.820       6.310      24.800      58.200      58.800
COEF. OF VARIATION................        0.642       0.806       0.451       0.459       0.235       0.670       0.719       0.885
PARAMETER RANGE
          MIN.....................        2.000       5.000      25.000       1.400       7.000       3.000       9.000       4.000
          MAX.....................       85.000     240.000     450.000      36.000     110.000     440.000     658.000     642.000
# OF EVENTS.......................           42          42          42          13           9          36          41          41
TOTAL FLOW VOLUME(INCH)...........        3.409       3.406       3.378       0.915       1.145       2.296       3.295       3.295
TOTAL MASS LOAD(LBS)..............   **********  **********  **********      74.200     407.000    1120.000    3520.000    2890.000
CONCENTRATION(LBS/AC-IN)..........   **********  **********  **********       1.390       6.090       8.400      18.300      15.100

                                          600         605         610         615         620         625         630         665
                                        TOTAL N      ORG N      NH3-N       NO2-N       NO3-N     TOT KJEL     NO2&NO3     PHOS-P
                                           N           N        TOTAL       TOTAL       TOTAL         N        N-TOTAL     P-WET
                                          MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                       --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................        0.600       0.321       0.045       0.017       0.221       0.931       0.180       0.054
STANDARD DEVIATION................        0.319       0.185       0.077       0.010       0.127       0.002       0.000       0.024
COEF. OF VARIATION................        0.532       0.577       1.723       0.549       0.576       0.002       0.002       0.443
PARAMETER RANGE
          MIN.....................        0.090       0.050       0.010       0.010       0.010       0.390       0.100       0.010
          MAX.....................        6.480       3.300       2.700       0.410       1.600       4.230       0.260       0.800
# OF EVENTS.......................           42          42          42          40          42           1           1          42
TOTAL FLOW VOLUME(INCH)...........        3.409       3.409       3.409       3.019       3.409       0.057       0.057       3.409
TOTAL MASS LOAD(LBS)..............       27.000      14.400       2.010       0.691       9.960       0.702       0.136       2.450
CONCENTRATION(LBS/AC-IN)..........        0.136       0.073       0.010       0.004       0.050       0.211       0.041       0.012

                                          680         685         690         937         940        1027        1034        1042
                                        T ORG C     T.INORG    T-CARBON    PTSSIUM     CHLORIDE    CADMIUM     CHROMIUM     COPPER
                                           C           C           C         K.TOT        CL        CD.TOT      CR.TOT      CU.TOT
                                          MG/L        MG/L        MG/L        MG/L        MG/L        UG/L        UG/L        UG/L
                                       --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................        9.340       4.650      14.000       0.912       3.070       1.430      15.500       5.360
STANDARD DEVIATION................        7.300       2.000       8.840       0.387       4.060       0.384       4.840       2.790
COEF. OF VARIATION................        0.782       0.431       0.632       0.424       1.322       0.269       0.313       0.521
PARAMETER RANGE
          MIN.....................        1.000       1.000       3.000       0.400       0.600       1.000      10.000       1.000
          MAX.....................      149.000      35.000     158.000       3.800      36.000       8.000      70.000      51.000
# OF EVENTS.......................           41          41          41          11           2          22          40          40
TOTAL FLOW VOLUME(INCH)...........        3.352       3.350       3.352       0.901       0.312       1.729       3.395       3.324
TOTAL MASS LOAD(LBS)..............      413.000     206.000     619.000      10.900      12.600       0.033       0.694       0.236
CONCENTRATION(LBS/AC-IN)..........        2.120       1.050       3.170       0.207       0.696       0.000       0.004       0.001
```

*** TABLE X - 31. ***

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                                        ***********************************
                                        *      STATISTICAL SUMMARY        *
                                        ***********************************
                                        *       CATCHMENT FILE : 16       *
                          ***************************************************************
                          * BROWARD COUNTY, FLORIDA.  TRANSPORTATION.          (FL 1 2) *
                          ***************************************************************
                          *   STORM SEWERED AREA          CATCHMENT AREA   58.30 ACRES *
                          ***************************************************************

                                      1045        1051        1092       31501       31616       31679       70299       70507
                                      IRON        LEAD        ZINC     TOT COLI    FEC COLI    FECSTREP    RES-SUSP     PHOS-T
                                     TOTAL      PB.TOT      ZN.TOT     MFIMENDO    MFM-FCBR    MF M-ENT    AT 180 C     ORTHO
                                      UG/L        UG/L        UG/L    LN/100ML    LN/100ML    LN/100ML       MG/L     MG/L P
                                  --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................  179.000     245.000      56.600       9.030       8.280       7.660      14.700       0.032
STANDARD DEVIATION................   92.900      92.900      31.600       7.580       8.340       6.940      13.300       0.013
COEF. OF VARIATION................    0.518       0.378       0.557       0.235       1.061       0.485       0.903       0.426
PARAMETER RANGE
            MIN...................    2.000      18.000       5.000       6.660       5.300       6.680       1.000       0.010
            MAX................... 3100.000    2700.000    1000.000      10.200      10.300       9.070     241.000       0.310
# OF EVENTS.......................       41          41          41           4           3           4          42          42
TOTAL FLOW VOLUME(INCH)...........    3.336       3.404       3.404       0.265       0.270       0.282       3.409       3.409
TOTAL MASS LOAD(LBS)..............    7.900      11.000       2.550      25.600      24.900      24.300     664.000       1.420
CONCENTRATION(LBS/AC-IN)..........    0.041       0.056       0.013      22.900      22.100      21.500       3.340       0.007

                                     71887
                                   TOTAL N
                                    AS NO3
                                      MG/L
                                  --------
MEAN..............................    4.920
STANDARD DEVIATION................    0.010
COEF. OF VARIATION................    0.002
PARAMETER RANGE
            MIN...................    2.300
            MAX...................   19.000
# OF EVENTS.......................        1
TOTAL FLOW VOLUME(INCH)...........    0.057
TOTAL MASS LOAD(LBS)..............    3.710
CONCENTRATION(LBS/AC-IN)..........    1.110
```

*** TABLE X - 31. ***

```
                              ***********************************
                              *        SUMMARY OF EVENTS        *
                              ***********************************
                              *       CATCHMENT FILE : 17       *
                    ***************************************************
                    * BROWARD COUNTY, FLORIDA.  COMMERCIAL.    (FL 1 3) *
                    ***************************************************
                    *   STORM SEWERED AREA      CATCHMENT AREA  20.40 ACRES *
                    ***************************************************


                    RAINFALL                                                   FLOW
                    --------                                                   ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                            CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------    --------  ------  ------  ----  ----


  1    123    75/ 5/29 13:16     1.20     0.538  0.448  2.67    0.40  75/ 5/29 13:15     1.75     0.352   0.655  11.20
              75/ 5/29 14:28                                          75/ 5/29 15: 0

  2    123    75/ 6/ 3 16:16     3.93     1.297  0.330  9.13    0.22  75/ 6/ 3 16:15     4.08     1.015   0.783  43.04
              75/ 6/ 3 20:12                                          75/ 6/ 3 20:20

  3    123    75/ 6/ 4 18:20     1.02     0.204  0.200  4.15    0.15  75/ 6/ 4 18:20     1.67     0.110   0.539   7.01
              75/ 6/ 4 19:21                                          75/ 6/ 4 20: 0

  4    123    75/ 6/17 10:55     2.98     0.544  0.182  2.22    0.30  75/ 6/17 10:56     3.07     0.569   1.046  28.83
              75/ 6/17 13:54                                          75/ 6/17 14: 0

  5    123    75/ 6/20 13:56     3.60     0.285  0.079  1.86    0.35  75/ 6/20 13:55     4.09     0.284   0.999  16.26
              75/ 6/20 17:32                                          75/ 6/20 18: 0

  6    123    75/ 6/23 15:47     5.22     1.746  0.335  5.79    0.47  75/ 6/23 15:47     5.22     1.778   1.019  52.42
              75/ 6/23 21: 0                                          75/ 6/23 21: 0

  7    123    75/ 6/26 18:41     3.75     0.316  0.084  0.55    4.32  75/ 6/26 18:41     4.32     0.298   0.945   2.54
              75/ 6/26 22:26                                          75/ 6/26 23: 0

  8    123    75/ 7/ 2 11:29     3.47     1.078  0.311  5.98    0.27  75/ 7/ 2 11:29     3.52     1.116   1.035  49.31
              75/ 7/ 2 14:57                                          75/ 7/ 2 15: 0

  9    123    75/ 7/ 4 12:25     2.52     0.871  0.346  3.92    0.45  75/ 7/ 4 12:25     2.59     0.852   0.978  45.62
              75/ 7/ 4 14:56                                          75/ 7/ 4 15: 0

 10    123    75/ 7/ 5  3:29     2.90     0.609  0.210  4.86    0.20  75/ 7/ 5  3:27     3.55     0.766   1.256  37.27
              75/ 7/ 5  6:23                                          75/ 7/ 5  7: 0

 11    123    77/ 7/ 5 23:29     1.67     0.228  0.137  1.38    0.35  77/ 7/ 5 23:29     2.02     0.152   0.666   9.72
              77/ 7/ 6  1: 9                                          77/ 7/ 6  1:30

 12    123    75/ 7/11 14:44     2.73     2.453  0.897  8.72    0.65  75/ 7/11 14:43     2.79     2.736   1.115  51.46
              75/ 7/11 17:28                                          75/ 7/11 17:30

 13    123    75/ 7/19  2:27     2.66     0.204  0.076  0.98    1.25  75/ 7/19  2:27     3.30     0.223   1.094   3.73
              75/ 7/19  5: 7                                          75/ 7/19  5:45

 14    123    75/ 8/ 2  1:54     3.03     0.535  0.176  5.96    0.21  75/ 8/ 2  1:54     3.43     0.569   1.065  44.72
              75/ 8/ 2  4:56                                          75/ 8/ 2  5:20

 15    123    75/ 8/ 4  4:23     1.27     0.268  0.212  2.04    0.25  75/ 8/ 4  4:20     1.67     0.195   0.726  12.72
              75/ 8/ 4  5:39                                          75/ 8/ 4  6: 0

 16    123    75/ 8/ 7 23:15     1.30     0.357  0.275  3.92    0.20  75/ 8/ 7 23:15     2.00     0.346   0.970  32.38
              75/ 8/ 8  0:33                                          75/ 8/ 8  1:15

 17    123    75/ 8/25  1:28     1.96     0.211  0.108  3.06    0.23  75/ 8/25  1:28     2.04     0.147   0.694   8.47
              75/ 8/25  3:26                                          75/ 8/25  3:30

 18    123    75/ 9/ 1 20:45     0.77     0.386  0.504  5.20    0.25  75/ 9/ 1 20:45     2.41     0.325   0.843  14.26
              75/ 9/ 1 21:31                                          75/ 9/ 1 23:10
```

*** TABLE X - 32. ***

```
                              ****************************
                              * SUMMARY OF EVENTS(CONTINUED) *
                              ****************************
                              *      CATCHMENT FILE : 17    *
***************************************************************
* BROWARD COUNTY, FLORIDA.  COMMERCIAL.              (FL 1 3) *
***************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA   20.40 ACRES *
***************************************************************
```

		RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
19	123	75/ 9/ 5 8:29 75/ 9/ 5 10:54	2.42	0.377	0.156	2.05	1.05	75/ 9/ 5 8:29 75/ 9/ 5 11:13	2.73	0.155	0.412	12.41	
20	123	75/ 9/ 7 16:20 75/ 9/ 7 18:30	2.17	0.340	0.157	7.45	0.13	75/ 9/ 7 16:20 75/ 9/ 7 18:30	2.17	0.242	0.710	24.79	
21	123	75/ 9/17 14:21 75/ 9/17 15:10	0.82	0.256	0.313	2.36	0.22	75/ 9/17 14:21 75/ 9/17 16:10	1.82	0.166	0.650	10.09	
22	123	75/ 9/18 16:24 75/ 9/19 0:37	8.21	4.159	0.506	8.13	4.38	75/ 9/18 16:24 75/ 9/19 1: 0	8.60	4.473	1.076	95.78	
23	123	75/ 9/19 19: 8 75/ 9/19 21:32	2.40	0.257	0.107	2.75	1.66	75/ 9/19 19: 8 75/ 9/19 23:15	4.12	0.491	1.909	12.44	
24	123	75/ 9/27 21: 2 75/ 9/28 0:18	3.27	0.617	0.189	1.77	1.17	75/ 9/27 21: 1 75/ 9/28 1: 0	3.98	0.832	1.347	32.98	
25	123	75/10/ 6 1:30 75/10/ 6 3:15	1.75	0.195	0.111	2.05	0.43	75/10/ 6 1:30 75/10/ 6 3:15	1.75	0.181	0.931	11.18	
26	123	75/10/19 6:21 75/10/19 8:54	2.55	0.248	0.097	0.49	1.55	75/10/19 6:21 75/10/19 9: 0	2.65	0.296	1.192	4.51	
27	123	75/10/20 20:57 75/10/20 23: 0	2.05	0.210	0.102	2.16	0.18	75/10/20 20:57 75/10/20 23: 0	2.05	0.208	0.991	9.98	
28	123	75/10/21 10:28 75/10/21 11:14	0.77	0.210	0.274	4.51	0.73	75/10/21 10:28 75/10/21 12:15	1.79	0.068	0.323	5.82	
29	123	75/10/22 10:42 75/10/22 14:10	3.46	0.458	0.132	3.68	0.58	75/10/22 10:42 75/10/22 14:10	3.46	0.536	1.170	38.85	
30	123	75/10/27 18:43 75/10/27 20:42	1.98	0.465	0.235	2.64	0.37	75/10/27 18:43 75/10/27 21: 0	2.29	0.586	1.259	29.58	
31	123	75/10/29 16:15 75/10/29 17:57	1.70	0.256	0.150	2.25	0.18	75/10/29 16:15 75/10/29 17:35	1.33	0.048	0.189	7.91	
32	123	75/11/ 4 21:22 75/11/ 4 23:51	2.48	0.512	0.206	2.55	0.37	75/11/ 4 21:22 75/11/ 4 23: 3	1.68	0.110	0.215	5.22	
33	123	75/11/20 5:59 75/11/20 8:31	2.54	0.812	0.320	2.35	1.97	75/11/20 5:59 75/11/20 8:35	2.60	0.752	0.926	22.74	
34	123	75/12/ 8 2:34 75/12/ 8 5:32	2.96	0.349	0.118	2.43	1.50	75/12/ 8 2:28 75/12/ 8 6: 0	3.54	0.207	0.594	8.65	
35	123	75/12/ 8 9:41 75/12/ 8 11: 9	1.47	0.210	0.143	0.98	1.50	75/12/ 8 9:41 75/12/ 8 13: 0	3.32	0.183	0.870	5.57	
36	123	76/ 2/ 1 11:33 76/ 2/ 1 14: 1	2.47	0.381	0.155	1.18	0.30	76/ 2/ 1 11:33 76/ 2/ 1 15: 0	3.45	0.385	1.010	11.43	

*** TABLE X - 32. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 17 *

* BROWARD COUNTY, FLORIDA. COMMERCIAL. (FL 1 3) *

* STORM SEWERED AREA CATCHMENT AREA 20.40 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
37	123	76/ 2/ 1 16: 4 76/ 2/ 1 18:29	2.42	0.225	0.093	2.40	0.17	76/ 2/ 1 16: 4 76/ 2/ 1 18:32	2.47	0.264	1.171	17.54	
38	123	76/ 2/24 22: 0 76/ 2/25 4:45	6.75	0.245	0.036	0.46	4.33	76/ 2/24 22: 0 76/ 2/25 5: 0	7.00	0.200	0.816	1.92	
39	123	76/ 2/25 3:25 76/ 2/25 10:34	7.15	0.873	0.122	1.18	6.47	76/ 2/25 3:25 76/ 2/25 10:53	7.47	0.720	0.825	10.47	
40	123	76/ 2/26 17:41 76/ 2/26 20:15	2.57	0.178	0.069	0.83	0.23	76/ 2/26 17:41 76/ 2/26 20:20	2.65	0.105	0.591	3.08	
41	123	76/ 2/28 4:22 76/ 2/28 7:57	3.58	0.735	0.205	3.04	0.18	76/ 2/28 4:22 76/ 2/28 8: 0	3.63	0.682	0.928	25.74	
42	123	76/ 2/28 9:16 76/ 2/28 16:52	7.60	0.296	0.039	0.83	5.62	76/ 2/28 9:16 76/ 2/28 17: 0	7.73	0.244	0.827	2.77	
43	123	76/ 4/ 6 7:12 76/ 4/ 6 11: 0	3.80	0.424	0.112	2.31	1.55	76/ 4/ 6 7:11 76/ 4/ 6 11: 0	3.82	0.245	0.577	16.31	
44	123	76/ 5/ 1 5:47 76/ 5/ 1 6:12	0.42	0.188	0.452	2.21	0.23	76/ 5/ 1 5:47 76/ 5/ 1 7:30	1.72	0.104	0.549	8.56	
45	123	76/ 5/ 1 12:51 76/ 5/ 1 13:29	0.63	0.270	0.426	1.57	0.30	76/ 5/ 1 12:51 76/ 5/ 1 15:15	2.40	0.273	1.012	13.63	
46	123	76/ 5/ 1 16:22 76/ 5/ 1 20: 8	3.77	0.519	0.138	2.58	0.60	76/ 5/ 1 16:22 76/ 5/ 1 20:20	3.97	0.375	0.723	17.08	
47	123	76/ 5/ 3 10:49 76/ 5/ 3 15: 0	4.18	0.418	0.100	0.55	2.10	76/ 5/ 3 10:44 76/ 5/ 3 15: 0	4.27	0.499	1.195	5.28	
48	123	76/ 5/15 20:25 76/ 5/16 4:22	7.95	0.885	0.111	1.48	1.50	76/ 5/15 20:25 76/ 5/16 4:25	8.00	0.784	0.885	9.03	
49	123	76/ 5/21 11: 2 76/ 5/21 14:55	3.88	0.228	0.059	0.64	0.47	76/ 5/21 11: 2 76/ 5/21 16: 0	4.97	0.136	0.597	3.29	
50	123	76/ 5/22 0:25 76/ 5/22 6:59	6.57	0.247	0.038	0.83	3.27	76/ 5/22 0:25 76/ 5/22 7: 0	6.58	0.211	0.855	4.88	
51	123	76/ 5/23 15:21 76/ 5/23 18:58	3.62	0.553	0.153	11.90	0.47	76/ 5/23 15:21 76/ 5/23 19: 0	3.65	0.505	0.913	44.03	
52	123	76/ 6/ 5 21:20 76/ 6/ 5 24: 0	2.67	1.011	0.379	5.81	0.18	76/ 6/ 5 21:20 76/ 6/ 5 24: 0	2.67	1.010	0.999	52.88	
53	123	76/ 6/ 7 21:19 76/ 6/ 8 1:41	4.37	1.651	0.378	7.84	1.17	76/ 6/ 7 21:19 76/ 6/ 8 1:50	4.52	1.602	0.970	51.67	
54	123	76/ 6/10 19:20 76/ 6/11 4:56	9.60	1.067	0.111	2.64	7.18	76/ 6/10 19:20 76/ 6/11 5: 0	9.67	0.895	0.839	24.70	

*** TABLE X - 32. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 17 *

* BROWARD COUNTY, FLORIDA. COMMERCIAL. (FL 1 3) *

* STORM SEWERED AREA CATCHMENT AREA 20.40 ACRES *

		RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
55	123	76/ 6/11 10:35 76/ 6/11 16:44	6.15	0.274	0.045	2.22	0.27	76/ 6/11 10:35 76/ 6/11 17: 0	6.42	0.178	0.649	4.67	
56	123	76/ 6/19 10:48 76/ 6/19 15: 0	4.20	0.444	0.106	2.64	0.80	76/ 6/19 10:48 76/ 6/19 15: 0	4.20	0.302	0.680	8.57	
57	123	76/ 6/23 8:26 76/ 6/23 14: 0	5.57	1.139	0.205	2.06	4.80	76/ 6/23 8:26 76/ 6/23 14: 0	5.57	1.122	0.985	22.49	
58	123	76/ 6/23 20: 5 76/ 6/24 0:14	4.15	2.348	0.566	6.27	1.48	76/ 6/23 20: 5 76/ 6/24 0:20	4.25	2.218	0.945	66.35	
59	123	76/ 7/ 7 7:10 76/ 7/ 7 12:22	5.20	1.675	0.322	4.70	1.68	76/ 7/ 7 7: 9 76/ 7/ 7 13: 0	5.85	1.520	0.907	40.00	
60	123	76/ 7/ 9 12:28 76/ 7/ 9 16:54	4.43	0.487	0.110	1.08	1.17	76/ 7/ 9 12:28 76/ 7/ 9 17: 0	4.54	0.530	1.088	17.24	
61	123	76/ 7/11 10:30 76/ 7/11 13:17	2.78	0.778	0.280	4.31	0.25	76/ 7/11 10:30 76/ 7/11 14: 0	3.50	0.613	0.788	37.43	
62	123	76/ 7/25 3:12 76/ 7/25 5:17	2.08	0.178	0.085	2.64	0.45	76/ 7/25 3:12 76/ 7/25 6:10	2.96	0.124	0.701	5.13	
63	123	76/ 7/31 11: 0 76/ 7/31 13:15	2.25	0.340	0.151	6.37	0.15	76/ 7/31 11: 0 76/ 7/31 14: 0	3.00	0.108	0.318	11.47	
64	123	76/ 8/ 1 17:30 76/ 8/ 1 21:57	4.45	0.905	0.203	3.45	0.46	76/ 8/ 1 17:30 76/ 8/ 1 22: 0	4.50	0.718	0.794	38.80	
65	123	76/ 8/ 2 6:57 76/ 8/ 2 8:13	1.27	0.228	0.180	2.35	0.25	76/ 8/ 2 6:57 76/ 8/ 2 9:10	2.21	0.133	0.584	9.60	
66	123	76/ 8/11 17:33 76/ 8/11 20: 5	2.54	0.213	0.084	2.16	1.29	76/ 8/11 17:33 76/ 8/11 20:42	3.15	0.174	0.818	13.90	
67	123	76/ 8/18 12:20 76/ 8/18 17: 0	4.67	0.297	0.064	0.79	1.45	76/ 8/18 12:20 76/ 8/18 17: 0	4.67	0.255	0.859	3.16	
68	123	76/ 8/18 23:55 76/ 8/19 7:35	7.67	1.478	0.193	1.96	2.35	76/ 8/18 23:55 76/ 8/19 7:57	8.04	1.265	0.856	27.58	
69	123	76/ 8/19 7:55 76/ 8/19 12:55	5.00	1.617	0.323	4.02	3.92	76/ 8/19 7:55 76/ 8/19 15: 0	7.09	1.249	0.772	33.33	
70	123	76/ 8/23 16:55 76/ 8/23 19:16	2.35	0.675	0.287	4.41	0.35	76/ 8/23 16:55 76/ 8/23 19:30	2.59	0.486	0.719	46.01	
71	123	76/ 9/10 19:59 76/ 9/10 21:30	1.52	0.381	0.251	2.84	0.15	76/ 9/10 20: 1 76/ 9/10 22: 0	1.98	0.121	0.318	10.79	
72	123	76/ 9/12 6: 6 76/ 9/12 8:59	2.88	0.403	0.140	3.53	0.22	76/ 9/12 6: 0 76/ 9/12 9: 0	3.00	0.476	1.181	35.10	

*** TABLE X - 32. ***

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                                  ********************************
                                  * SUMMARY OF EVENTS(CONTINUED) *
                                  ********************************
                                  *       CATCHMENT FILE : 17    *
                    ***********************************************************
                    * BROWARD COUNTY, FLORIDA.  COMMERCIAL.          (FL 1 3) *
                    ***********************************************************
                    *    STORM SEWERED AREA         CATCHMENT AREA   20.40 ACRES *
                    ***********************************************************


                              RAINFALL                                                FLOW
                              --------                                                ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)     DURATION     VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN     (HRS)        (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                      CFS
-----  ----  ---------------     --------  ------  -----  -----   ----- ---------------     --------     ------   ------   ----  ----


  73   123     76/ 9/12  9:58      5.13    0.291  0.057  1.49     0.30  76/ 9/12  9:58      5.79       0.238    0.819   17.49
               76/ 9/12 15: 6                                            76/ 9/12 15:45

  74   123     76/ 9/12 19:13      3.25    0.266  0.082  2.36     0.25  76/ 9/12 19:13      3.29       0.179    0.670   12.05
               76/ 9/12 22:28                                            76/ 9/12 22:30

  75   123     76/ 9/14 15:58      1.68    1.069  0.635  5.72     0.68  76/ 9/14 15:58      4.04       1.048    0.980   43.32
               76/ 9/14 17:39                                            76/ 9/14 20: 0

  76   123     76/ 9/15 12:37      5.54    1.269  0.229  6.46     0.72  76/ 9/15 12:37      5.55       1.000    0.787   43.28
               76/ 9/15 18: 9                                            76/ 9/15 18:10

  77   123     76/ 9/23 19:49      2.82    0.363  0.129  1.76     0.35  76/ 9/23 19:49      2.85       0.217    0.598    9.48
               76/ 9/23 22:38                                            76/ 9/23 22:40

  78   123     76/10/ 9 14:30      5.21    0.447  0.086  4.21     0.11  76/10/ 9 14:30      5.50       0.335    0.750   36.11
               76/10/ 9 19:43                                            76/10/ 9 20: 0

  79   123     76/10/11  2: 5      4.87    0.784  0.161  1.37     3.65  76/10/11  2: 5      6.42       0.506    0.646   15.87
               76/10/11  6:57                                            76/10/11  8:30

  80   123     76/10/18 16: 7      3.55    0.312  0.088  2.94     0.25  76/10/18 16: 7      4.05       0.307    0.981   14.10
               76/10/18 19:40                                            76/10/18 20:10

  81   123     76/11/ 2 20:30      8.77    4.416  0.504  4.47     7.11  76/11/ 2 20:30      9.50       4.232    0.958   62.16
               76/11/ 3  5:16                                            76/11/ 3  6: 0

  82   123     76/11/17  3: 4      2.48    0.387  0.156  2.75     0.32  76/11/17  3: 4      2.93       0.278    0.716   11.30
               76/11/17  5:33                                            76/11/17  6: 0

  83   123     76/11/12 13:30      3.43    0.277  0.081  0.59     1.98  76/11/12 13:30      4.50       0.249    0.899    5.63
               76/11/12 16:56                                            76/11/12 18: 0

  84   123     76/12/ 1 11:35      5.95    0.297  0.050  0.59     1.46  76/12/ 1 11:35      6.42       0.148    0.459    3.06
               76/12/ 1 17:32                                            76/12/ 1 18: 0

  85   123     76/12/ 6  1:22      9.82    1.936  0.197  7.55     2.97  76/12/ 6  1:22     10.14       1.743    0.900   48.13
               76/12/ 6 11:11                                            76/12/ 6 11:30

  86   123     76/12/13 20:30      5.50    1.936  0.352  6.47     1.65  76/12/13 20:30      5.50       1.981    1.024   46.25
               76/12/14  2: 0                                            76/12/14  2: 0

  87   123     76/12/14  8:19      2.85    0.300  0.105  0.79     0.65  76/12/14  8:19      3.68       0.168    0.559    5.64
               76/12/14 11:10                                            76/12/14 12: 0

  88   123     76/12/23 20:24      7.00    0.492  0.070  0.68     5.33  76/12/23 20:24      7.10       0.163    0.331    1.54
               76/12/24  3:24                                            76/12/24  3:30

  89   123     76/12/31 17:15      3.30    0.202  0.061  1.33     1.66  76/12/31 17:15      4.75       0.165    0.815   10.14
               76/12/31 20:33                                            76/12/31 22: 0

  90   123     77/ 1/ 3  8:57      3.97    0.757  0.191  3.12     1.98  77/ 1/ 3  8:57      5.05       0.518    0.685   20.62
               77/ 1/ 3 12:55                                            77/ 1/ 3 14: 0


                                        *** TABLE X - 32. ***
```

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 17 *

* BROWARD COUNTY, FLORIDA. COMMERCIAL. (FL 1 3) *

* STORM SEWERED AREA CATCHMENT AREA 20.40 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
91	123	77/ 1/15 12: 0 77/ 1/15 17: 9	5.15	0.787	0.153	2.86	1.85	77/ 1/15 11:48 77/ 1/15 18: 0	6.20	0.552	0.702	34.55	
92	123	77/ 1/29 6: 1 77/ 1/29 7:30	1.48	0.293	0.197	3.51	0.20	77/ 1/29 6: 1 77/ 1/29 8:15	2.23	0.315	1.078	24.43	
93	123	77/ 1/31 15:33 77/ 1/31 20:44	5.18	0.280	0.054	3.42	0.43	77/ 1/31 15:33 77/ 1/31 21:20	5.78	0.491	1.753	16.13	
94	123	77/ 2/ 8 7: 8 77/ 2/ 8 16: 6	8.97	0.858	0.096	3.32	5.17	77/ 2/ 8 7: 8 77/ 2/ 8 17: 0	9.87	0.790	0.921	29.64	
95	123	77/ 2/14 13:37 77/ 2/14 17:56	4.32	0.414	0.096	1.11	1.32	77/ 2/14 13:37 77/ 2/14 18: 0	4.38	0.416	1.005	10.62	
96	123	77/ 2/15 22:40 77/ 2/16 2:30	3.83	0.217	0.057	0.64	3.83	77/ 2/15 22:40 77/ 2/16 5: 0	6.33	0.263	1.211	3.26	
97	123	77/ 4/13 13:25 77/ 4/13 16:29	3.07	0.214	0.070	0.73	1.70	77/ 4/13 13:25 77/ 4/13 18: 0	4.58	0.211	0.986	8.80	
98	123	77/ 4/13 20:16 77/ 4/14 2:11	5.92	1.418	0.240	4.24	2.15	77/ 4/13 20:16 77/ 4/14 4: 0	7.73	1.295	0.913	41.99	
99	123	77/ 4/24 12:28 77/ 4/24 15:54	3.43	0.325	0.095	2.02	2.05	77/ 4/24 12:28 77/ 4/24 16:55	4.45	0.296	0.912	20.85	
100	123	77/ 5/ 9 17:38 77/ 5/ 9 23: 0	5.37	1.005	0.187	7.82	1.78	77/ 5/ 9 17:38 77/ 5/ 9 23:30	5.87	0.877	0.873	42.76	
101	123	77/ 5/10 13:28 77/ 5/10 17: 2	3.57	0.420	0.118	1.10	3.05	77/ 5/10 12:56 77/ 5/10 20: 0	7.07	0.342	0.815	4.94	
102	123	77/ 5/12 11: 0 77/ 5/12 15:24	4.40	0.220	0.050	0.73	1.45	77/ 5/12 10:45 77/ 5/12 16: 0	5.25	0.221	1.000	3.83	
103	123	77/ 5/20 19:13 77/ 5/20 22:40	3.45	1.165	0.338	8.00	0.20	77/ 5/20 19:13 77/ 5/20 24: 0	4.78	1.305	1.120	47.04	
104	123	77/ 5/27 15: 5 77/ 5/27 19:53	4.80	0.805	0.168	2.58	0.57	77/ 5/27 15: 5 77/ 5/27 20: 0	4.92	0.749	0.929	25.40	
105	123	77/ 5/29 16:45 77/ 5/29 17:28	0.72	1.606	2.242	10.42	0.57	77/ 5/29 16:45 77/ 5/29 21:20	4.58	1.602	0.997	70.26	
106	123	77/ 6/ 1 15:42 77/ 6/ 2 1:14	9.53	1.491	0.156	2.58	1.68	77/ 6/ 1 15:30 77/ 6/ 2 1:20	9.83	1.279	0.857	30.72	
107	123	77/ 6/ 2 11:45 77/ 6/ 2 16:12	4.45	1.536	0.345	3.18	2.47	77/ 6/ 2 11:40 77/ 6/ 2 18:30	6.83	1.475	0.960	40.90	
108	123	77/ 6/ 3 14: 7 77/ 6/ 3 19:44	5.62	0.527	0.094	1.20	4.18	77/ 6/ 3 14: 7 77/ 6/ 3 21:10	7.05	0.438	0.832	11.23	

*** TABLE X - 32. ***

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                                                ******************************
                                                * SUMMARY OF EVENTS(CONTINUED) *
                                                ******************************
                                                *        CATCHMENT FILE : 17   *
                                    ***************************************************
                                    * BROWARD COUNTY, FLORIDA.  COMMERCIAL.       (FL 1 3) *
                                    ***************************************************
                                    *    STORM SEWERED AREA        CATCHMENT AREA   20.40 ACRES *
                                    ***************************************************


                                    RAINFALL                                      FLOW
                                    --------                                      ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME   AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.  FLOW  DAYS
                                                  IN/HR  IN/HR  HRS                                                  CFS
-----  ----  ---------------    --------  ------  -----  -----  ----- ---------------    --------   ------   ------  ----  ----


 109    123    77/ 6/ 9  6:44     8.22     2.167  0.264  4.70   3.68  77/ 6/ 9  6:44      8.27      2.252    1.039  44.47
               77/ 6/ 9 14:57                                         77/ 6/ 9 15: 0

 110    123    77/ 6/ 9 15: 0     5.23     0.655  0.125  0.83   3.50  77/ 6/ 9 15: 0      4.67      0.151    0.230   3.19
               77/ 6/ 9 20:14                                         77/ 6/ 9 19:40

 111    123    77/ 6/10 16: 2     2.22     0.836  0.377  4.89   0.58  77/ 6/10 16: 0      2.50      0.925    1 107  42.81
               77/ 6/10 18:15                                         77/ 6/10 18:30

 112    123    77/ 6/20  9:25     2.75     0.427  0.155  1.96   0.98  77/ 6/20  9:25      3.09      0.212    0.496  11.92
               77/ 6/20 12:10                                         77/ 6/20 12:30

 113    123    76/12/24  3:42     6.18     0.391  0.063  0.68   1.77  76/12/24  3:30      6.50      0.117    0.300   2.09
               76/12/24  9:53                                         76/12/24 10: 0
```

*** TABLE X - 32. ***

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                                                        ************************************
                                                        *      STATISTICAL SUMMARY         *
                                                        ************************************
                                                        *      CATCHMENT FILE : 17         *
                                        **********************************************************************
                                        * BROWARD COUNTY, FLORIDA.  COMMERCIAL.                     (FL 1 3) *
                                        **********************************************************************
                                        *    STORM SEWERED AREA                 CATCHMENT AREA   20.40 ACRES *
                                        **********************************************************************

                                        70           80           95          310          335          340          500          515
                                       TURB        COLOR      CNDUCTVY        BOD          COD          COD        RESIDUE      RESIDUE
                                       JKSN        PT-CO       AT 25C        5 DAY      LOWLEVEL     HI LEVEL       TOTAL      DISS-105
                                       JTU         UNITS      MICROMHO       MG/L         MG/L         MG/L         MG/L        C MG/L
                                    --------     --------     --------     --------     --------     --------     --------     --------
MEAN............................      14.000       11.700      113.000        4.420       46.600       55.300      129.000       84.300
STANDARD DEVIATION..............       9.070        6.420      177.000        1.470       26.600       55.200      129.000      102.000
COEF. OF VARIATION..............       0.646        0.547        1.560        0.333        0.572        0.998        1.004        1.207
PARAMETER RANGE
          MIN...................       2.000        5.000       32.000        1.400       10.000        3.000       31.000       17.000
          MAX...................     480.000      140.000     6200.000       17.400      360.000     2200.000     4170.000     3450.000
# OF EVENTS.....................          31           31           31           11           11           22           30           30
TOTAL FLOW VOLUME(INCH).........      15.540       15.540       14.731        6.716        4.755       10.840       15.044       15.044
TOTAL MASS LOAD(LBS)............  **********   **********   **********      137.000     1020.000     2770.000     8940.000     5870.000
CONCENTRATION(LBS/AC-IN)........  **********   **********   **********        1.000       10.600       12.500       29.100       19.100

                                       530          600          605          610          615          620          625          630
                                     RESIDUE      TOTAL N       ORG N        NH3-N        NO2-N        NO3-N      TOT KJEL     NO2&NO3
                                     TOT NFLT        N            N          TOTAL        TOTAL        TOTAL          N        N-TOTAL
                                       MG/L         MG/L         MG/L         MG/L         MG/L         MG/L         MG/L         MG/L
                                    --------     --------     --------     --------     --------     --------     --------     --------
MEAN............................      76.200        0.904        0.649        0.035        0.017        0.217        0.702        0.243
STANDARD DEVIATION..............       0.153        0.499        0.450        0.038        0.010        0.162        0.466        0.166
COEF. OF VARIATION..............       0.002        0.552        0.693        1.090        0.574        0.748        0.664        0.682
PARAMETER RANGE
          MIN...................      64.000        0.070        0.090        0.010        0.010        0.010        0.010        0.010
          MAX...................      90.000       11.100       11.000        0.340        0.400        1.300       11.000        1.320
# OF EVENTS.....................           1           31           31           31           29           31           30           30
TOTAL FLOW VOLUME(INCH).........       0.404       16.060       15.785       16.060       14.961       15.924       14.729       14.937
TOTAL MASS LOAD(LBS)............     142.000       67.100       47.400        2.600        1.170       15.900       47.800       16.800
CONCENTRATION(LBS/AC-IN)........      17.300        0.205        0.147        0.008        0.004        0.049        0.159        0.055

                                       665          680          685          690          929          937          940         1002
                                     PHOS-P      T ORG C      T.INORG     T-CARBON      SODIUM      PTSSIUM     CHLORIDE      ARSENIC
                                     P-WET          C            C            C          NA.TOT       K.TOT         CL         AS.TOT
                                       MG/L         MG/L         MG/L         MG/L         MG/L         MG/L         MG/L         UG/L
                                    --------     --------     --------     --------     --------     --------     --------     --------
MEAN............................       0.081        7.270        4.660       11.900        7.880        0.633       12.100        1.370
STANDARD DEVIATION..............       0.063        5.710        2.400        7.150        0.016        0.287        2.700        0.096
COEF. OF VARIATION..............       0.768        0.786        0.515        0.600        0.002        0.453        0.224        0.070
PARAMETER RANGE
          MIN...................       0.010        1.000        1.000        3.000        4.900        0.200        6.000        1.000
          MAX...................       1.000       99.000       34.000      116.000       24.000        4.500      118.000        2.000
# OF EVENTS.....................          31           30           30           30            1            9            2            2
TOTAL FLOW VOLUME(INCH).........      16.060       15.142       15.142       15.142        0.205        3.985        0.927        1.127
TOTAL MASS LOAD(LBS)............       6.040      509.000      326.000      833.000        7.480       11.700       51.700        0.007
CONCENTRATION(LBS/AC-IN)........       0.018        1.650        1.060        2.700        1.790        0.143        2.740        0.000
```

*** TABLE X - 33. ***

STATISTICAL SUMMARY

CATCHMENT FILE : 17

BROWARD COUNTY, FLORIDA. COMMERCIAL. (FL 1 3)

STORM SEWERED AREA CATCHMENT AREA 20.40 ACRES

	1027 CADMIUM CD.TOT UG/L	1034 CHROMIUM CR.TOT UG/L	1042 COPPER CU.TOT UG/L	1045 IRON TOTAL UG/L	1051 LEAD PB.TOT UG/L	1092 ZINC ZN.TOT UG/L	31501 TOT COLI MFIMENDO LN/100ML	31616 FEC COLI MFM-FCBR LN/100ML
MEAN	1.590	34.100	12.500	317.000	352.000	114.000	10.800	8.540
STANDARD DEVIATION	0.477	67.200	13.200	218.000	229.000	64.600	10.400	7.990
COEF. OF VARIATION	0.301	1.969	1.054	0.689	0.651	0.565	0.703	0.579
PARAMETER RANGE								
MIN	1.000	1.000	2.000	10.000	6.000	10.000	8.700	5.300
MAX	7.000	2300.000	500.000	8400.000	7000.000	1900.000	12.600	11.800
# OF EVENTS	20	29	29	29	30	30	5	5
TOTAL FLOW VOLUME(INCH)	8.965	14.026	14.026	15.050	15.848	15.848	2.653	2.653
TOTAL MASS LOAD(LBS)	0.066	2.210	0.812	22.000	25.800	8.380	28.600	26.400
CONCENTRATION(LBS/AC-IN)	0.000	0.008	0.003	0.072	0.080	0.026	24.600	22.400

	31679 FECSTREP MF M-ENT LN/100ML	70299 RES-SUSP AT 180 C MG/L	70507 PHOS-T ORTHO MG/L P	71887 TOTAL N AS NO3 MG/L
MEAN	9.240	46.600	0.037	4.230
STANDARD DEVIATION	9.200	39.800	0.031	2.420
COEF. OF VARIATION	0.958	0.854	0.846	0.572
PARAMETER RANGE				
MIN	6.680	1.000	0.010	0.700
MAX	11.300	1740.000	0.730	49.000
# OF EVENTS	5	31	31	21
TOTAL FLOW VOLUME(INCH)	2.585	15.540	16.060	9.937
TOTAL MASS LOAD(LBS)	27.000	3350.000	2.760	194.000
CONCENTRATION(LBS/AC-IN)	23.100	10.600	0.008	0.958

*** TABLE X - 33. ***

```
****************************************
*        SUMMARY OF EVENTS             *
****************************************
*        CATCHMENT FILE : 18           *
**************************************************************
* DADE COUNTY, FLORIDA.     MULTI-FAMILY.          (FL 2 1) *
**************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA   14.70 ACRES *
**************************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	77/ 5/ 4 7:34 77/ 5/ 4 20:30	12.93	6.661	0.515	5.44	9.37	77/ 5/ 4 8:46 77/ 5/ 4 20:30	11.73	4.721	0.709	21.82	
2	123	77/ 5/11 4:40 77/ 5/11 6:58	2.30	1.217	0.529	8.67	0.27	77/ 5/11 4:44 77/ 5/11 5:33	0.82	0.659	0.542	31.95	
3	123	77/ 5/11 15:42 77/ 5/11 18:20	2.63	2.090	0.794	3.01	1.23	77/ 5/11 15:51 77/ 5/11 17:46	1.92	1.430	0.684	26.89	
4	123	77/ 6/ 1 15:55 77/ 6/ 1 23: 0	7.08	2.355	0.332	9.13	0.45	77/ 6/ 1 15:55 77/ 6/ 1 20:13	4.30	1.179	0.501	17.61	
	122	77/ 6/ 1 15:55 77/ 6/ 1 22:48	6.88	2.132	0.310	6.09	0.45				0.553		
5	123	77/ 6/ 2 10:14 77/ 6/ 2 15:26	5.20	2.335	0.449	2.49	2.95	77/ 6/ 2 10:30 77/ 6/ 2 15: 1	4.52	1.824	0.781	15.74	
	122	77/ 6/ 2 10:17 77/ 6/ 2 15:26	5.15	2.334	0.453	2.67	2.90				0.782		
6	123	77/ 6/ 4 4:42 77/ 6/ 4 5:59	1.28	0.426	0.332	5.00	0.12	77/ 6/ 4 4:43 77/ 6/ 4 5:46	1.05	0.162	0.381	13.97	
	122	77/ 6/ 4 4:42 77/ 6/ 4 5:57	1.25	0.372	0.298	3.82	0.12				0.435		
7	123	77/ 6/20 12:11 77/ 6/20 16:29	4.30	0.867	0.202	3.62	0.68	77/ 6/20 12:15 77/ 6/20 16:30	4.25	0.707	0.815	16.12	
	122	77/ 6/20 12:11 77/ 6/20 16:14	4.05	1.398	0.345	5.68	0.68				0.505		
8	123	77/ 7/15 6:30 77/ 7/15 9:29	2.98	1.672	0.561	4.90	2.40	77/ 7/15 6:35 77/ 7/15 9:40	3.08	0.670	0.400	16.07	
	122	77/ 7/15 6:30 77/ 7/15 9: 8	2.63	1.456	0.553	4.31	2.40				0.460		
9	123	77/ 7/16 8:51 77/ 7/16 15:15	6.40	1.658	0.259	3.62	2.48	77/ 7/16 8:58 77/ 7/16 15:15	6.29	1.463	0.882	17.87	
	122	77/ 7/16 8:53 77/ 7/16 15: 9	6.27	1.616	0.258	2.84	2.45				0.906		
10	123	77/ 8/ 6 10: 5 77/ 8/ 6 11: 1	0.93	0.320	0.343	2.55	0.93	77/ 8/ 6 10:22 77/ 8/ 6 11:35	1.22	0.216	0.674	10.17	
	122	77/ 8/ 6 10: 5 77/ 8/ 6 11:23	1.30	0.389	0.299	2.90	0.93				0.555		
11	123	77/ 8/ 6 18:53 77/ 8/ 6 19:41	0.80	0.225	0.282	3.72	0.13	77/ 8/ 6 18:50 77/ 8/ 6 19:42	0.87	0.158	0.702	8.43	

*** TABLE X - 34. ***

```
                    ******************************
                    * SUMMARY OF EVENTS(CONTINUED) *
                    ******************************
                    *       CATCHMENT FILE : 18    *
*****************************************************************
* DADE COUNTY, FLORIDA.      MULTI-FAMILY.            (FL 2 1) *
*****************************************************************
*    STORM SEWERED AREA           CATCHMENT AREA    14.70 ACRES *
*****************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
11	122	77/ 8/ 6 18:50 77/ 8/ 6 19:25	0.58	0.225	0.387	3.83	0.18	77/ 8/ 6 18:50 77/ 8/ 6 19:42	0.87	0.158	0.702	8.43	
12	122	77/ 8/ 8 8:41 77/ 8/ 8 9:45	1.07	0.536	0.501	3.23	0.34	77/ 8/ 8 8:43 77/ 8/ 8 10: 0	1.29	0.218	0.406	12.02	
13	123	77/ 8/ 8 17:45 77/ 8/ 8 22:59	5.23	0.873	0.167	3.63	3.71	77/ 8/ 8 17:46 77/ 8/ 8 22: 8	4.37	0.543	0.622	13.88	
	122	77/ 8/ 8 17:45 77/ 8/ 8 22:28	4.71	1.020	0.216	9.70	3.71				0.532		
14	123	77/ 8/12 3:40 77/ 8/12 10:30	6.84	1.565	0.229	3.72	4.37	77/ 8/12 3:41 77/ 8/12 9:48	6.12	0.902	0.576	16.90	
	122	77/ 8/12 3:41 77/ 8/12 10:30	6.82	1.556	0.228	4.41	4.35				0.580		
15	123	77/ 8/16 22:55 77/ 8/16 23:25	0.50	0.228	0.456	1.18	0.27	77/ 8/16 22:55 77/ 8/16 23:41	0.77	0.127	0.558	5.26	
	122	77/ 8/16 22:55 77/ 8/16 23:50	0.92	0.250	0.272	2.05	0.27				0.510		
16	123	77/ 8/22 15: 9 77/ 8/22 16:45	1.60	1.309	0.818	4.51	0.57	77/ 8/22 15:24 77/ 8/22 16:33	1.15	0.525	0.401	12.18	
	122	77/ 8/22 15: 7 77/ 8/22 16:44	1.62	1.291	0.798	3.04	0.60				0.407		
17	123	77/ 8/24 1:40 77/ 8/24 5:30	3.84	0.372	0.097	1.38	0.90	77/ 8/24 2:24 77/ 8/24 4:20	1.93	0.317	0.851	6.46	
	122	77/ 8/24 1:40 77/ 8/24 5:24	3.73	0.423	0.113	1.57	0.90				0.749		
18	123	77/ 9/ 1 1:50 77/ 9/ 1 2:27	0.62	0.107	0.174	1.41	0.20	77/ 9/ 1 1:55 77/ 9/ 1 2:25	0.50	0.088	0.818	6.85	
	122	77/ 9/ 1 1:51 77/ 9/ 1 2: 0	0.15	0.130	0.855	1.57	0.18				0.674		
19	123	77/ 9/ 1 10:25 77/ 9/ 1 13:41	3.27	1.914	0.586	6.96	1.09	77/ 9/ 1 10:57 77/ 9/ 1 13:16	2.32	1.072	0.560	26.14	
	122	77/ 9/ 1 10:25 77/ 9/ 1 13:45	3.34	2.035	0.610	9.70	1.09				0.527		
20	123	77/ 9/ 2 11:54 77/ 9/ 2 13:50	1.93	0.764	0.395	2.45	0.71	77/ 9/ 2 11:58 77/ 9/ 2 13:48	1.83	0.440	0.641	11.17	
	122	77/ 9/ 2 11:53 77/ 9/ 2 13:59	2.10	0.850	0.405	3.53	0.73				0.576		

*** TABLE X - 34. ***

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                                   ******************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ******************************
                                   *        CATCHMENT FILE : 18   *
                          ****************************************************
                          * DADE COUNTY, FLORIDA.     MULTI-FAMILY.     (FL 2 1) *
                          ****************************************************
                          *    STORM SEWERED AREA        CATCHMENT AREA   14.70 ACRES *
                          ****************************************************


                              RAINFALL                                              FLOW
                              --------                                              ----

EVENT RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK  DRY
      GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)   COEFF.   FLOW  DAYS
                                                 IN/HR IN/HR  HRS                                                  CFS
----- ----  ---------------  --------  ------  ----  ----   ----- ---------------   --------   ------   ------   ----  ----


 21    123   77/ 9/ 3  0:20    4.65    0.709 0.153  1.86    0.21  77/ 9/ 3  0:29     3.40      0.313    0.442    5.35
             77/ 9/ 3  4:59                                       77/ 9/ 3  3:53

       122   77/ 9/ 3  0:21    4.73    0.749 0.158  1.76    0.20                                        0.418
             77/ 9/ 3  5: 5

 22    123   77/ 9/ 7  4:35    2.83    0.533 0.188  4.02    0.12  77/ 9/ 7  4:36     2.90      0.329    0.617    9.99
             77/ 9/ 7  7:25                                       77/ 9/ 7  7:30

       122   77/ 9/ 7  4:35    2.90    0.662 0.228  6.07    0.12                                        0.497
             77/ 9/ 7  7:29

 23    123   77/ 9/11 14:25    1.55    0.375 0.242  3.43    0.22  77/ 9/11 14:32     1.47      0.204    0.544    9.55
             77/ 9/11 15:58                                       77/ 9/11 16: 0

       122   77/ 9/11 14:25    0.79    0.495 0.630  2.65    0.22                                        0.413
             77/ 9/11 15:12

 24    123   77/ 9/27 12:52    0.18    0.121 0.659  2.36    0.15  77/ 9/27 12:50     0.63      0.058    0.482    4.75
             77/ 9/27 13: 3                                       77/ 9/27 13:28

       122   77/ 9/27 12:50    0.23    0.150 0.640  2.04    0.18                                        0.388
             77/ 9/27 13: 4

 25    123   77/10/ 6 18:10    2.38    0.487 0.204  2.36    1.35  77/10/ 6 18:10     2.05      0.317    0.651    6.83
             77/10/ 6 20:33                                       77/10/ 6 20:13

       122   77/10/ 6 18:10    2.48    0.462 0.186  2.05    1.35                                        0.686
             77/10/ 6 20:39

 26    123   77/12/ 6 10:35    2.50    0.706 0.282  3.82    0.17  77/12/ 6 10:35     2.50      0.310    0.439   15.57
             77/12/ 6 13: 5                                       77/12/ 6 13: 5

       122   77/12/ 6 10:35    2.38    0.805 0.338  6.37    0.17                                        0.385
             77/12/ 6 12:58

 27    123   77/12/27 16:27    0.45    0.061 0.136  0.78    0.03  77/12/27 16:27     0.48      0.090    1.468    7.35
             77/12/27 16:54                                       77/12/27 16:56

       122   77/12/27 16:27    0.43    0.175 0.403  1.49    0.03                                        0.515
             77/12/27 16:53

 28    123   78/ 1/ 3  6:37    4.18    0.288 0.069  0.46    0.77  78/ 1/ 3  6:35     1.47      0.083    0.290    1.83
             78/ 1/ 3 10:48                                       78/ 1/ 3  8: 3

       122   78/ 1/ 3  6:40    4.65    0.283 0.061  0.64    0.72                                        0.294
             78/ 1/ 3 11:19

 29    123   78/ 1/ 4 20:20    2.15    0.231 0.108  2.21    1.57  78/ 1/ 4 20:20     2.20      0.113    0.488    2.81
             78/ 1/ 4 22:29                                       78/ 1/ 4 22:32

       122   78/ 1/ 4 20:20    2.12    0.273 0.129  3.13    1.57                                        0.414
             78/ 1/ 4 22:27


                                         *** TABLE X - 34. ***
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                      ********************************
                      * SUMMARY OF EVENTS(CONTINUED) *
                      ********************************
                      *      CATCHMENT FILE : 18    *
          ****************************************************
          * DADE COUNTY, FLORIDA.    MULTI-FAMILY.     (FL 2 1) *
          ****************************************************
          *   STORM SEWERED AREA      CATCHMENT AREA   14.70 ACRES *
          ****************************************************
```

			RAINFALL					FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
30	123	78/ 1/13 14:15 78/ 1/13 15:20	1.08	0.257	0.238	2.13	0.20	78/ 1/13 14:17 78/ 1/13 16: 0	1.72	0.129	0.500	5.49	
	122	78/ 1/13 14:15 78/ 1/13 15:18	1.05	0.268	0.255	2.00	0.20				0.480		
31	123	78/ 1/19 20:15 78/ 1/20 1:10	4.92	0.735	0.150	3.42	4.43	78/ 1/19 20:17 78/ 1/20 1:45	5.47	0.287	0.390	11.88	
	122	78/ 1/19 20:15 78/ 1/20 1:45	5.50	0.799	0.145	3.32	4.43				0.359		
32	123	78/ 2/18 15: 6 78/ 2/18 21:36	6.50	2.029	0.312	4.64	0.28	78/ 2/18 15: 6 78/ 2/18 23: 1	7.92	0.714	0.352	16.20	
	122	78/ 2/18 15: 6 78/ 2/18 22:38	7.53	2.106	0.280	5.17	0.28				0.339		
33	123	78/ 3/ 3 15:46 78/ 3/ 3 20:12	4.43	1.570	0.354	5.63	0.25	78/ 3/ 3 15:46 78/ 3/ 3 20:30	4.73	0.425	0.271	14.04	
	122	78/ 3/ 3 15:46 78/ 3/ 3 20:22	4.60	1.519	0.330	2.82	0.25				0.280		
34	123	78/ 3/ 9 1:19 78/ 3/ 9 6:45	5.43	0.576	0.106	2.45	3.97	78/ 3/ 9 1:24 78/ 3/ 9 6:23	4.98	0.209	0.364	8.37	
	122	78/ 3/ 9 1:19 78/ 3/ 9 7: 5	5.77	0.574	0.100	2.76	3.97				0.365		
35	123	78/ 3/28 11: 0 78/ 3/28 15: 2	4.03	0.211	0.052	0.64	1.32	78/ 3/28 11: 0 78/ 3/28 13:28	2.47	0.064	0.305	1.66	
	122	78/ 3/28 11: 1 78/ 3/28 14: 1	3.00	0.196	0.065	0.74	1.30				0.329		
36	123	78/ 4/23 21:37 78/ 4/23 23:57	2.33	0.750	0.322	12.27	0.10	78/ 4/23 21:37 78/ 4/23 23:49	2.20	0.331	0.441	15.20	
	122	78/ 4/23 21:37 78/ 4/23 24: 0	2.38	0.737	0.309	10.36	0.10				0.449		
37	123	78/ 5/10 14:39 78/ 5/10 15:19	0.67	0.335	0.503	1.37	0.18	78/ 5/10 14:18 78/ 5/10 16: 0	1.70	0.109	0.325	5.13	
	122	78/ 5/10 14:39 78/ 5/10 15:26	0.78	0.279	0.356	1.73	0.19				0.391		
38	123	78/ 5/11 14: 6 78/ 5/11 16:52	2.77	0.493	0.178	2.58	0.68	78/ 5/11 14: 6 78/ 5/11 15:27	1.35	0.160	0.325	6.67	
	122	78/ 5/11 14: 6 78/ 5/11 16:55	2.82	0.557	0.198	2.31	0.68				0.288		

*** TABLE X - 34. ***

SUMMARY OF EVENTS(CONTINUED)

CATCHMENT FILE : 18

DADE COUNTY, FLORIDA. MULTI-FAMILY. (FL 2 1)

STORM SEWERED AREA CATCHMENT AREA 14.70 ACRES

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
39	123	78/ 5/18 11:30 78/ 5/18 15:16	3.77	0.750	0.199	4.25	0.77	78/ 5/18 11:45 78/ 5/18 15:20	3.58	0.239	0.318	8.51	
	122	78/ 5/18 11:30 78/ 5/18 15:20	3.83	0.746	0.195	2.49	0.77				0.320		
40	123	78/ 5/25 20:11 78/ 5/25 22:29	2.30	0.184	0.080	0.64	0.63	78/ 5/25 20:14 78/ 5/25 22:31	2.28	0.075	0.406	2.84	
	122	78/ 5/25 20:15 78/ 5/25 22:27	2.20	0.190	0.086	0.55	0.57				0.393		
41	123	78/ 5/26 2:27 78/ 5/26 3:58	1.52	0.614	0.405	2.86	0.60	78/ 5/26 2:23 78/ 5/26 4:30	2.12	0.273	0.444	12.47	
	122	78/ 5/26 2:27 78/ 5/26 4: 1	1.57	0.585	0.373	3.05	0.60				0.466		
42	123	78/ 5/28 4: 8 78/ 5/28 8:26	4.30	1.946	0.453	5.26	3.93	78/ 5/28 4: 6 78/ 5/28 10:14	6.13	0.784	0.403	22.73	
	122	78/ 5/28 4:39 78/ 5/28 10: 1	5.37	1.548	0.288	8.36	3.42				0.507		
43	123	78/ 6/12 15:33 78/ 6/12 16: 8	0.58	1.020	1.748	8.58	0.13	78/ 6/12 15:33 78/ 6/12 16:40	1.12	0.445	0.436	27.13	
	122	78/ 6/12 15:33 78/ 6/12 16: 4	0.52	1.014	1.962	10.15	0.13				0.439		

TABLE X - 34.

```
                 ****************************************
                 *        STATISTICAL SUMMARY           *
                 ****************************************
                 *        CATCHMENT FILE : 18           *
*****************************************************************************
* DADE COUNTY, FLORIDA.      MULTI-FAMILY.                      (FL 2 1) *
*****************************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA    14.70 ACRES *
*****************************************************************************
```

	70 TURB JKSN JTU	76 TRBIDMTR HACH FTU	80 COLOR PT-CO UNITS	95 CNDUCTVY AT 25C MICROMHO	340 COD HI LEVEL MG/L	500 RESIDUE TOTAL MG/L	515 RESIDUE DISS-105 C MG/L	600 TOTAL N N MG/L
MEAN..............................	45.000	159.000	23.600	153.000	72.300	283.000	102.000	1.270
STANDARD DEVIATION..............	20.900	102.000	9.270	86.500	35.200	157.000	47.100	0.669
COEF. OF VARIATION..............	0.464	0.644	0.392	0.566	0.487	0.556	0.460	0.528
PARAMETER RANGE								
MIN....................	4.000	7.000	5.000	12.000	5.600	53.000	36.000	0.330
MAX....................	190.000	760.000	70.000	580.000	900.000	2320.000	314.000	14.200
# OF EVENTS.....................	9	6	15	15	15	15	15	15
TOTAL FLOW VOLUME(INCH)..........	4.019	1.227	5.239	5.221	5.246	5.235	5.235	5.246
TOTAL MASS LOAD(LBS)............	**********	**********	**********	**********	1260.000	4930.000	1790.000	22.100
CONCENTRATION(LBS/AC-IN)........	**********	**********	**********	**********	16.400	64.000	23.200	0.287

	605 ORG N N MG/L	610 NH3-N TOTAL MG/L	615 NO2-N TOTAL MG/L	620 NO3-N TOTAL MG/L	625 TOT KJEL N MG/L	630 NO2&NO3 N-TOTAL MG/L	665 PHOS-P P-WET MG/L	680 T ORG C C MG/L
MEAN..............................	1.080	0.075	0.012	0.100	1.160	0.110	0.216	6.640
STANDARD DEVIATION..............	0.577	0.069	0.004	0.073	0.605	0.076	0.115	4.740
COEF. OF VARIATION..............	0.532	0.933	0.350	0.724	0.523	0.688	0.532	0.715
PARAMETER RANGE								
MIN....................	0.250	0.010	0.010	0.020	0.270	0.010	0.040	1.000
MAX....................	14.000	0.650	0.060	0.400	14.000	0.410	1.600	53.000
# OF EVENTS.....................	15	15	15	15	15	15	15	11
TOTAL FLOW VOLUME(INCH)..........	5.246	5.246	4.726	5.246	5.246	5.246	5.246	4.018
TOTAL MASS LOAD(LBS)............	18.900	1.300	0.186	1.750	20.200	1.930	3.780	88.800
CONCENTRATION(LBS/AC-IN)........	0.245	0.017	0.003	0.023	0.262	0.025	0.049	1.500

	685 T.INORG C MG/L	690 T-CARBON C MG/L	937 PTSSIUM K.TOT MG/L	1027 CADMIUM CD.TOT UG/L	1034 CHROMIUM CR.TOT UG/L	1042 COPPER CU.TOT UG/L	1045 IRON TOTAL UG/L	1051 LEAD PB.TOT UG/L
MEAN..............................	12.800	19.500	1.210	2.740	12.200	13.000	720.000	286.000
STANDARD DEVIATION..............	9.010	13.200	0.465	0.813	2.420	6.900	473.000	155.000
COEF. OF VARIATION..............	0.703	0.680	0.385	0.297	0.198	0.530	0.657	0.541
PARAMETER RANGE								
MIN....................	4.000	6.000	0.100	1.000	10.000	2.000	10.000	6.000
MAX....................	55.000	83.000	2.900	8.000	50.000	130.000	9000.000	2000.000
# OF EVENTS.....................	11	11	12	5	16	16	16	16
TOTAL FLOW VOLUME(INCH)..........	4.018	4.018	4.658	0.981	5.593	5.566	5.402	5.560
TOTAL MASS LOAD(LBS)............	172.000	260.000	18.700	0.009	0.228	0.241	13.000	5.300
CONCENTRATION(LBS/AC-IN)........	2.910	4.410	0.274	0.001	0.003	0.003	0.163	0.065

*** TABLE X - 35. ***

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                                             ******************************
                                             *     STATISTICAL SUMMARY    *
                                             ******************************
                                             *      CATCHMENT FILE : 18   *
                              ****************************************************
                              * DADE COUNTY, FLORIDA.    MULTI-FAMILY.     (FL 2 1) *
                              ****************************************************
                              *    STORM SEWERED AREA       CATCHMENT AREA  14.70 ACRES *
                              ****************************************************

                                   1092       31501      31625      31673      70299      70507      71887
                                   ZINC      TOT COLI   FEC COLI   FECSTREP   RES-SUSP   PHOS-T     TOTAL N
                                  ZN.TOT     MFIMENDO   M-FCAGAD   PC M-ENT   AT 180 C   ORTHO       AS NO3
                                   UG/L      LN/100ML   LN/100ML   LN/100ML     MG/L     MG/L P       MG/L
                                 --------   --------   --------   --------   --------   --------   --------
MEAN...........................   209.000      8.240      9.210      9.280    173.000      0.080      5.400
STANDARD DEVIATION.............   122.000      0.000      0.000      0.000    126.000      0.059      2.600
COEF. OF VARIATION.............     0.582      0.000      0.000      0.000      0.730      0.743      0.482
PARAMETER RANGE
          MIN..................    20.000      6.910      3.000      7.600      2.000      0.010      1.500
          MAX..................  2000.000      9.550     10.400      9.800   1550.000      0.430     31.000
# OF EVENTS....................        16          1          1          1         15         15         15
TOTAL FLOW VOLUME(INCH)........     5.549      0.177      0.177      0.177      5.202      5.202      5.202
TOTAL MASS LOAD(LBS)...........     3.860     23.000     24.000     24.100   2990.000      1.390     93.500
CONCENTRATION(LBS/AC-IN).......     0.047     22.100     23.100     23.100     39.100      0.018      1.220
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*** TABLE X - 35. ***

```
                                  ******************************
                                  *      SUMMARY OF EVENTS     *
                                  ******************************
                                  *      CATCHMENT FILE : 26   *
                         ************************************************************
                         * CHICAGO, ILLINOIS.  OAKDALE.                  (IL 1 1) *
                         ************************************************************
                         * COMBINED SEWERED AREA         CATCHMENT AREA    12.90 ACRES *
                         ************************************************************


                                   RAINFALL                                      FLOW
                                   --------                                      ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR  IN/HR   HRS                                                 CFS
-----  ----  ---------------    --------  ------  -----  -----   ----- ---------------    --------   ------   ------   ----  ----


  1    129    59/ 5/18 24: 0     1.85     0.680  0.368   3.60    0.28  59/ 5/19  0: 1     2.98      0.279    0.411    7.25
              59/ 5/19  1:51                                            59/ 5/19  3: 0

  2    129    59/ 7/28 24: 0     4.07     0.727  0.179   2.40    3.71  59/ 7/29  1: 1     4.08      0.396    0.545    9.20
              59/ 7/29  4: 4                                            59/ 7/29  5: 6

  3    129    59/10/ 5 24: 0    11.71     1.052  0.090   1.80   10.38  59/10/ 6  0: 1    11.98      0.600    0.570    2.50
              59/10/ 6 11:43                                            59/10/ 6 12: 0

  4    129    60/ 7/ 1 24: 0     3.70     1.645  0.445   3.00    2.68  60/ 7/ 2  0: 1     3.12      0.789    0.480   17.40
              60/ 7/ 2  3:42                                            60/ 7/ 2  3: 8

  5    129    60/ 7/21 24: 0     1.38     0.286  0.207   3.00    0.18  60/ 7/22  0: 1     2.23      0.107    0.374    2.05
              60/ 7/22  1:23                                            60/ 7/22  2:15

  6    129    60/ 7/25 24: 0     6.02     0.881  0.146   3.60    3.50  60/ 7/26  0: 1     6.98      0.547    0.620    4.30
              60/ 7/26  6: 1                                            60/ 7/26  7: 0

  7    129    60/ 8/19 24: 0     1.85     0.642  0.348   2.40    1.03  60/ 8/20  0:29     1.52      0.190    0.296    4.70
              60/ 8/20  1:51                                            60/ 8/20  2: 0

  8    129    60/ 9/17 24: 0     3.32     0.703  0.212   1.20    0.45  60/ 9/18  0: 1     3.73      0.410    0.583    5.10
              60/ 9/18  3:19                                            60/ 9/18  3:45

  9    129    60/10/13 24: 0     2.18     0.286  0.131   2.40    0.27  60/10/14  0: 1     2.98      0.195    0.681    4.50
              60/10/14  2:11                                            60/10/14  3: 0

 10    129    61/ 4/24  0: 5     0.92     0.180  0.197   1.20    0.90  61/ 4/24  0: 1     2.08      0.141    0.780    3.45
              61/ 4/24  1: 0                                            61/ 4/24  2: 6

 11    129    61/ 8/30 24: 0     2.88     2.053  0.712   5.40    1.66  61/ 8/31  1: 0     3.50      0.539    0.263   11.80
              61/ 8/31  2:53                                            61/ 8/31  4:30

 12    129    62/ 7/ 1 24: 0     5.13     3.223  0.628   3.60    4.83  62/ 7/ 2  0: 1     4.82      1.515    0.470   18.00
              62/ 7/ 2  5: 8                                            62/ 7/ 2  4:50

 13    129    63/ 4/16 24: 0     4.33     0.730  0.168   3.00    1.72  63/ 4/17  0: 1     5.48      0.464    0.636    6.50
              63/ 4/17  4:20                                            63/ 4/17  5:30

 14    129    63/ 4/18 24: 0     0.72     0.509  0.711   3.60    0.70  63/ 4/19  0: 1     1.98      0.257    0.505   11.60
              63/ 4/19  0:43                                            63/ 4/19  2: 0

 15    129    63/ 4/28 24: 0     5.97     1.350  0.226   2.40    0.50  63/ 4/29  0: 1     5.98      0.748    0.554    6.70
              63/ 4/29  5:58                                            63/ 4/29  6: 0

 16    129    63/ 5/ 3 24: 0     2.70     0.370  0.137   3.00    2.65  63/ 5/ 4  0:30     3.50      0.144    0.389    2.75
              63/ 5/ 4  2:42                                            63/ 5/ 4  4: 0

 17    129    63/ 6/18 24: 0     2.65     0.300  0.113   3.00    2.45  63/ 6/19  0: 1     3.98      0.305    1.016    7.80
              63/ 6/19  2:39                                            63/ 6/19  4: 0

 18    129    63/ 7/12 24: 0    11.98     1.472  0.123   1.20    9.13  63/ 7/13  0: 1    11.98      0.748    0.508    4.05
              63/ 7/13 11:59                                            63/ 7/13 12: 0


                                      *** TABLE X - 36. ***
```

```
                                        ******************************
                                        * SUMMARY OF EVENTS(CONTINUED) *
                                        ******************************
                                        *        CATCHMENT FILE : 26   *
                              ********************************************************
                              * CHICAGO, ILLINOIS.  OAKDALE.                 (IL 1 1) *
                              ********************************************************
                              * COMBINED SEWERED AREA        CATCHMENT AREA   12.90 ACRES *
                              ********************************************************


                                   RAINFALL                                                   FLOW
                                   --------                                                   ----

EVENT  RAIN  DATE(START-END)      DURATION  VOLUME   AVG   PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)   (INCH)   RAIN  RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                    IN/HR IN/HR   HRS                                                  CFS
-----  ----  --------------       --------  ------  ----  ----    ----- --------------     --------   ------   ------   ----  ----

  19    129    63/ 8/ 1 24: 0      1.60    0.675  0.422  3.60    1.50  63/ 8/ 2  0: 1     2.98      0.304    0.451    5.95
               63/ 8/ 2  1:36                                          63/ 8/ 2  3: 0

  20    129    63/ 8/23 24: 0      1.86    0.347  0.186  0.60    1.57  63/ 8/24  0: 1     2.98      0.179    0.516    2.90
               63/ 8/24  1:52                                          63/ 8/24  3: 0
```

*** TABLE X - 36. ***

```
                  ******************************
                  *      SUMMARY OF EVENTS     *
                  ******************************
                  *     CATCHMENT FILE : 27    *
      ******************************************************
      * CHICAGO, ILLINOIS.  HIGHLAND PARK.          (IL 1 2) *
      ******************************************************
      *    STORM SEWERED AREA        CATCHMENT AREA  313.60 ACRES *
      ******************************************************


                           RAINFALL                                             FLOW
                           --------                                             ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)     DURATION    VOLUME    RUNOFF    PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)   (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN     (HRS)       (INCH)    COEFF.    FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                       CFS
-----  ----  ---------------     --------  ------  -----  -----   ----- ---------------     --------    ------    ------    ----  ----


  1    123    77/ 7/21 11:35      1.67     0.310  0.186  0.98     1.58  77/ 7/21 11:35     2.67       0.016     0.051     5.10
              77/ 7/21 13:15                                            77/ 7/21 14:15

  2    123    77/ 7/24 10:20      0.67     0.230  0.344  1.10     1.17  77/ 7/24 10:20     1.17       0.002     0.011     4.20
              77/ 7/24 11: 0                                            77/ 7/24 11:30

  3    123    77/ 8/ 4  1:25     16.00     0.700  0.044  0.43     6.25  77/ 8/ 4  1:25    16.42       0.039     0.056     6.10
              77/ 8/ 4 17:25                                            77/ 8/ 4 17:50
```

*** TABLE X - 37. ***

```
                                                            ***********************************
                                                            *       STATISTICAL SUMMARY       *
                                                            ***********************************
                                                            *      CATCHMENT FILE : 27        *
                                            ***************************************************************
                                            * CHICAGO, ILLINOIS.  HIGHLAND PARK.              (IL 1 2) *
                                            ***************************************************************
                                            *   STORM SEWERED AREA          CATCHMENT AREA  313.60 ACRES *
                                            ***************************************************************

                                         310         403         500         530         535         610         625         630
                                         BOD         LAB     RESIDUE     RESIDUE     RESIDUE       NH3-N    TOT KJEL     NO2&NO3
                                       5 DAY          PH       TOTAL    TOT NFLT    VOL NFLT       TOTAL           N     N-TOTAL
                                        MG/L          SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                    --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................    12.700       7.590     903.000     722.000      88.200       0.229       2.490       0.682
STANDARD DEVIATION................     0.306       0.182     354.000     346.000      28.300       0.177       0.832       0.279
COEF. OF VARIATION................     0.024       0.024       0.392       0.480       0.321       0.774       0.334       0.409
PARAMETER RANGE
          MIN.....................     6.000       6.700     406.000     284.000      34.000       0.100       1.000       0.300
          MAX.....................    18.000       8.000    4340.000    4140.000     346.000       1.200       8.900       2.000
# OF EVENTS.......................         3           3           3           3           3           3           3           3
TOTAL FLOW VOLUME(INCH)...........     0.016       0.016       0.016       0.016       0.016       0.016       0.016       0.016
TOTAL MASS LOAD(LBS)..............    14.600 ***********    1050.000     836.000     102.000       0.265       2.880       0.790
CONCENTRATION(LBS/AC-IN)..........     2.870 ***********     205.000     164.000      20.000       0.052       0.564       0.155

                                         956       70506
                                      SILICA    SOL PO4-
                                        SIO2     T P-COL
                                        MG/L        MG/L
                                    --------    --------
MEAN..............................    33.400       0.159
STANDARD DEVIATION................    10.600       0.068
COEF. OF VARIATION................     0.317       0.427
PARAMETER RANGE
          MIN.....................    17.600       0.055
          MAX.....................   173.000       0.460
# OF EVENTS.......................         3           3
TOTAL FLOW VOLUME(INCH)...........     0.016       0.016
TOTAL MASS LOAD(LBS)..............    38.700       0.184
CONCENTRATION(LBS/AC-IN)..........     7.570       0.036
```

*** TABLE X - 38. ***

```
                                   ******************************
                                   *      SUMMARY OF EVENTS     *
                                   ******************************
                                   *     CATCHMENT FILE : 28    *
                        ************************************************************
                        * CHICAGO, ILLINOIS.  WOODFIELD.                 (IL 1 3) *
                        ************************************************************
                        *   STORM SEWERED AREA        CATCHMENT AREA  345.60 ACRES *
                        ************************************************************


                            RAINFALL                                            FLOW
                            --------                                            ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                   CFS
-----  ----  ----------- ----    --------  ------  -----  -----   ----- ---------------    --------   ------   ------   ----  ----


  1    123     77/ 4/19 13:40      1.83    0.150  0.082  0.24     0.83  77/ 4/19 14:25     0.92      0.034    0.228   20.00
               77/ 4/19 15:30                                           77/ 4/19 15:20

  2    123     77/ 4/20 14:10      2.17    0.430  0.198  1.32     0.50  77/ 4/20 14:25     3.33      0.249    0.578   70.00
               77/ 4/20 16:20                                           77/ 4/20 17:45

  3    123     77/ 4/21 10:15      2.33    0.120  0.051  0.12     2.33  77/ 4/21 11: 0     1.58      0.058    0.484   23.00
               77/ 4/21 12:35                                           77/ 4/21 12:35

  4    123     77/ 5/21  9:55      3.25    0.320  0.098  2.04     3.33  77/ 5/21 13: 0     1.08      0.126    0.394   88.00
               77/ 5/21 13:10                                           77/ 5/21 14: 5

  5    123     77/ 5/31  1:45      0.75    0.210  0.280  0.48     0.25  77/ 5/31  1:50     0.25      0.073    0.349   65.00
               77/ 5/31  2:30                                           77/ 5/31  2: 5

  6    123     77/ 6/17 19:40      1.50    0.100  0.067  0.24     1.58  77/ 6/17 20:55     0.67      0.039    0.392   33.00
               77/ 6/17 21:10                                           77/ 6/17 21:35
```

*** TABLE X - 39. ***

```
                    ****************************
                    *    STATISTICAL SUMMARY   *
                    ****************************
                    *     CATCHMENT FILE : 28  *
**********************************************************
* CHICAGO, ILLINOIS.  WOODFIELD.              (IL 1 3) *
**********************************************************
*   STORM SEWERED AREA         CATCHMENT AREA  345.60 ACRES *
**********************************************************
```

	310 BOD 5 DAY MG/L	403 LAB PH SU	410 T ALK CACO3 MG/L	500 RESIDUE TOTAL MG/L	530 RESIDUE TOT NFLT MG/L	535 RESIDUE VOL NFLT MG/L	610 NH3-N TOTAL MG/L	625 TOT KJEL N MG/L
MEAN..............................	24.000	7.650	71.200	1260.000	448.000	53.700	0.729	1.780
STANDARD DEVIATION..............	8.170	0.362	0.108	516.000	415.000	30.100	0.315	0.340
COEF. OF VARIATION..............	0.340	0.047	0.002	0.410	0.926	0.561	0.432	0.191
PARAMETER RANGE								
MIN....................	7.000	7.100	62.000	450.000	80.000	14.000	0.100	1.000
MAX....................	53.000	8.400	79.000	4220.000	1750.000	130.000	1.300	3.200
# OF EVENTS......................	5	5	1	5	5	5	5	5
TOTAL FLOW VOLUME(INCH)..........	0.393	0.397	0.071	0.357	0.357	0.357	0.397	0.397
TOTAL MASS LOAD(LBS)............	740.000	##########	395.000	35200.000	12500.000	1500.000	22.700	55.300
CONCENTRATION(LBS/AC-IN)........	5.450	##########	16.100	285.000	102.000	12.200	0.165	0.403

	630 NO2&NO3 N-TOTAL MG/L	956 SILICA SIO2 MG/L	70506 SOL PO4- T P-COL MG/L
MEAN..............................	1.730	13.700	0.156
STANDARD DEVIATION..............	0.626	5.540	0.104
COEF. OF VARIATION..............	0.361	0.403	0.667
PARAMETER RANGE			
MIN....................	0.900	2.800	0.060
MAX....................	3.100	63.500	0.980
# OF EVENTS......................	5	5	5
TOTAL FLOW VOLUME(INCH)..........	0.397	0.397	0.397
TOTAL MASS LOAD(LBS)............	53.900	428.000	4.850
CONCENTRATION(LBS/AC-IN)........	0.393	3.110	0.035

*** TABLE X - 40. ***

```
                                    ******************************
                                    *      SUMMARY OF EVENTS     *
                                    ******************************
                                    *      CATCHMENT FILE : 29   *
                          ************************************************
                          * CHICAGO, ILLINOIS.  CENTEX.            (IL 1 4) *
                          ************************************************
                          *   STORM SEWERED AREA     CATCHMENT AREA  236.80 ACRES *
                          ************************************************


                               RAINFALL                                             FLOW
                               --------                                             ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                                   CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------    --------   ------   ------   ----  ----


   1    123    77/ 4/21 10:30     2.33    0.130  0.056  0.12    3.50  77/ 4/21 10:30     3.50      0.026    0.197    2.70
               77/ 4/21 12:50                                         77/ 4/21 14: 0

   2    123    77/ 5/15 13:45     0.17    0.140  0.841  0.24    0.33  77/ 5/15 13:45     0.33      0.000    0.003    0.73
               77/ 5/15 13:55                                         77/ 5/15 14: 5

   3    123    77/ 5/21 13:20     2.42    0.060  0.025  0.12    4.25  77/ 5/21 13:20     4.25      0.011    0.184    1.40
               77/ 5/21 15:45                                         77/ 5/21 17:35

   4    123    77/ 5/31  1:40     1.33    0.380  0.285  1.20    2.00  77/ 5/31  3:10     0.50      0.021    0.055   19.00
               77/ 5/31  3: 0                                         77/ 5/31  3:40

   5    123    77/ 6/ 5  2:30     3.25    0.890  0.274  2.04    3.25  77/ 6/ 5  4: 0     1.75      0.146    0.164   44.00
               77/ 6/ 5  5:45                                         77/ 6/ 5  5:45

   6    123    77/ 6/30  7:20     1.08    0.840  0.776  2.07    1.08  77/ 6/30  7:55     0.50      0.025    0.029   24.00
               77/ 6/30  8:25                                         77/ 6/30  8:25
```

*** TABLE X - 41. ***

```
                                        ********************************
                                        *     STATISTICAL SUMMARY      *
                                        ********************************
                                        *      CATCHMENT FILE : 29     *
                        ****************************************************
                        * CHICAGO, ILLINOIS.  CENTEX.               (IL 1 4) *
                        ****************************************************
                        *   STORM SEWERED AREA      CATCHMENT AREA  236.80 ACRES *
                        ****************************************************

                                  310        403        410        500        530        535        610        625
                                  BOD        LAB       T ALK     RESIDUE    RESIDUE    RESIDUE     NH3-N    TOT KJEL
                                 5 DAY        PH       CACO3      TOTAL     TOT NFLT   VOL NFLT    TOTAL        N
                                 MG/L         SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                               --------   --------   --------   --------   --------   --------   --------   --------
MEAN..........................   13.500      7.580    109.000    319.000    102.000     24.800      0.396      1.180
STANDARD DEVIATION............    1.980      0.131      0.217     57.300     29.000      8.910      0.188      0.359
COEF. OF VARIATION............    0.146      0.017      0.002      0.180      0.285      0.360      0.474      0.305
PARAMETER RANGE
          MIN.................    7.000      7.300     97.000    166.000      8.000      3.000      0.100      0.500
          MAX.................   23.000      8.700    120.000    620.000    282.000     52.000      0.900      2.500
# OF EVENTS...................        6          6          1          6          6          6          6          6
TOTAL FLOW VOLUME(INCH).......    0.182      0.182      0.012      0.182      0.182      0.182      0.182      0.182
TOTAL MASS LOAD(LBS)..........  132.000 **********     70.200   3100.000    991.000    241.000      3.860     11.500
CONCENTRATION(LBS/AC-IN)......    3.070 **********     24.700     72.200     23.000      5.610      0.090      0.267

                                  630        956       70506
                                NO2&NO3    SILICA    SOL PO4-
                                N-TOTAL     SIO2     T P-COL
                                 MG/L       MG/L       MG/L
                               --------   --------   --------
MEAN..........................    1.070      4.830      0.242
STANDARD DEVIATION............    0.474      3.350      0.081
COEF. OF VARIATION............    0.443      0.694      0.336
PARAMETER RANGE
          MIN.................    0.100      1.300      0.130
          MAX.................    3.900     17.000      1.480
# OF EVENTS...................        6          6          6
TOTAL FLOW VOLUME(INCH).......    0.182      0.182      0.182
TOTAL MASS LOAD(LBS)..........   10.400     47.100      2.360
CONCENTRATION(LBS/AC-IN)......    0.242      1.090      0.055
```

*** TABLE X - 42. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 30

CHICAGO, ILLINOIS. MUNDELEIN. (IL 1 5)

STORM SEWERED AREA CATCHMENT AREA 1139.20 ACRES

		RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	77/ 4/19 14:10 77/ 4/19 17:45	3.58	0.250	0.070	0.36	3.58	77/ 4/19 16:40 77/ 4/19 19: 0	2.33	0.043	0.171	33.00	
2	123	77/ 4/21 10:15 77/ 4/21 14:10	3.92	0.170	0.043	0.36	4.00	77/ 4/21 11:40 77/ 4/21 15:10	3.50	0.039	0.227	20.00	
3	123	77/ 5/ 4 20:35 77/ 5/ 5 0: 5	3.50	0.450	0.129	0.48	2.00	77/ 5/ 4 21:25 77/ 5/ 5 0:15	2.83	0.052	0.116	34.00	
4	123	77/ 5/31 2:25 77/ 5/31 4:45	2.33	1.110	0.476	2.40	1.83	77/ 5/31 2:45 77/ 5/31 5:25	2.67	0.122	0.110	157.00	
5	123	77/ 6/ 8 13:50 77/ 6/ 8 16:15	2.42	0.530	0.219	3.00	0.33	77/ 6/ 8 13:55 77/ 6/ 8 16:20	2.42	0.068	0.129	164.00	
6	123	77/ 6/17 18:20 77/ 6/17 20:55	2.58	0.900	0.348	2.28	0.42	77/ 6/17 18:35 77/ 6/17 21:10	2.58	0.072	0.080	72.00	
7	123	77/ 6/30 7:20 77/ 6/30 10:10	2.83	1.120	0.399	1.83	0.92	77/ 6/30 7:30 77/ 6/30 10:15	2.75	0.102	0.091	127.00	
8	123	77/ 7/15 9:55 77/ 7/15 16:20	6.42	0.830	0.129	0.24	6.59	77/ 7/15 16:20 77/ 7/15 17:25	1.08	0.015	0.018	44.00	

TABLE X - 43.

```
                                    *******************************
                                    *     STATISTICAL SUMMARY     *
                                    *******************************
                                    *     CATCHMENT FILE : 30     *
                           ************************************************************
                           * CHICAGO, ILLINOIS.  MUNDELEIN.                   (IL 1 5) *
                           ************************************************************
                           *   STORM SEVERED AREA        CATCHMENT AREA 1139.20 ACRES *
                           ************************************************************

                                   310         403         500         530         535         610         625         630
                                   BOD         LAB       RESIDUE     RESIDUE     RESIDUE      NH3-N     TOT KJEL    NO2&NO3
                                  5 DAY         PH        TOTAL     TOT NFLT    VOL NFLT      TOTAL        N        N-TOTAL
                                  MG/L          SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................  16.800       7.570     501.000     326.000      44.400       0.373       1.500       1.060
STANDARD DEVIATION................   3.520       0.264     220.000     210.000      23.300       0.227       0.483       0.368
COEF. OF VARIATION................   0.209       0.035       0.439       0.644       0.526       0.609       0.323       0.347
PARAMETER RANGE
          MIN.....................   8.560       6.400     176.000      39.000      10.000       0.100       0.400       0.300
          MAX.....................  44.000       8.400    1990.000    1740.000     140.000       1.400       5.100       6.470
# OF EVENTS.......................       8           8           8           8           8           8           8           8
TOTAL FLOW VOLUME(INCH)...........   0.502       0.504       0.504       0.504       0.504       0.491       0.504       0.504
TOTAL MASS LOAD(LBS)..............2180.000 ***********   65200.000   42400.000    5780.000      47.300     195.000     138.000
CONCENTRATION(LBS/AC-IN)..........   3.810 ***********     113.000      73.900      10.100       0.065       0.339       0.240

                                   956        70506
                                 SILICA     SOL PO4-
                                  SIO2      T P-COL
                                  MG/L        MG/L
                                --------    --------
MEAN..............................  11.600       0.128
STANDARD DEVIATION................   7.790       0.075
COEF. OF VARIATION................   0.670       0.583
PARAMETER RANGE
          MIN.....................   1.900       0.045
          MAX..................... 138.000       0.440
# OF EVENTS.......................       8           8
TOTAL FLOW VOLUME(INCH)...........   0.504       0.504
TOTAL MASS LOAD(LBS)..............1510.000      16.600
CONCENTRATION(LBS/AC-IN)..........   2.630       0.029
```

*** TABLE X - 44. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 31

CHICAGO, ILLINOIS. GLENDALE HEIGHTS. (IL 1 6)

STORM SEWERED AREA CATCHMENT AREA 992.00 ACRES

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	77/ 4/20 12: 0 77/ 4/20 18:30	6.50	0.350	0.054	1.32	4.33	77/ 4/20 12: 0 77/ 4/20 18:55	6.92	0.086	0.246	57.00	
2	123	77/ 4/21 8:25 77/ 4/21 16:35	8.17	0.300	0.037	0.48	5.00	77/ 4/21 8:25 77/ 4/21 17:50	9.42	0.088	0.293	13.00	
3	123	77/ 5/ 4 19: 0 77/ 5/ 4 23: 5	4.08	0.700	0.171	1.08	1.67	77/ 5/ 4 19: 0 77/ 5/ 4 23:35	4.58	0.042	0.061	20.00	
4	123	77/ 5/15 12: 5 77/ 5/15 13:50	1.75	0.750	0.429	3.23	1.83	77/ 5/15 12: 5 77/ 5/15 16:25	4.33	0.084	0.112	92.00	
5	123	77/ 5/29 23:25 77/ 5/29 23:30	0.08	0.010	0.120	0.12	-4.75	77/ 5/29 18: 0 77/ 5/30 0:15	6.25	0.003	0.322	0.63	
6	123	77/ 6/ 5 4:20 77/ 6/ 5 7:50	3.50	0.740	0.211	1.44	1.33	77/ 6/ 5 4:20 77/ 6/ 5 8: 0	3.67	0.024	0.032	15.00	
7	123	77/ 6/11 1:30 77/ 6/11 4:50	3.33	0.570	0.171	1.44	1.08	77/ 6/11 1:30 77/ 6/11 4:50	3.33	0.013	0.023	11.00	
8	123	77/ 6/17 20:25 77/ 6/17 21:20	0.92	0.350	0.382	1.44	1.08	77/ 6/17 20:25 77/ 6/17 23:30	3.08	0.016	0.046	14.00	

*** TABLE X - 45. ***

```
                                                  ********************************
                                                  *      STATISTICAL SUMMARY     *
                                                  ********************************
                                                  *      CATCHMENT FILE : 31     *
                                    **************************************************************
                                    * CHICAGO, ILLINOIS.  GLENDALE HEIGHTS.            (IL 1 6) *
                                    **************************************************************
                                    *    STORM SEVERED AREA          CATCHMENT AREA  992.00 ACRES *
                                    **************************************************************

                                        310         403         410         500         530         535         610         625
                                        BOD         LAB        T ALK      RESIDUE     RESIDUE     RESIDUE      NH3-N     TOT KJEL
                                       5 DAY         PH        CACO3       TOTAL     TOT NFLT    VOL NFLT      TOTAL        N
                                        MG/L         SU         MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                      --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................      14.200       7.630     118.000    2430.000    2370.000     194.000       0.434       2.020
STANDARD DEVIATION................       5.760       0.267       0.286    1860.000    2050.000     153.000       0.237       0.998
COEF. OF VARIATION................       0.405       0.035       0.002       0.768       0.865       0.786       0.546       0.493
PARAMETER RANGE
          MIN.....................       5.000       6.500      99.000     424.000      79.700      11.000       0.100       0.500
          MAX.....................      80.000       8.200     139.000    6740.000    6470.000     532.000       1.000       4.500
# OF EVENTS.......................           8           8           1           7           8           8           8           8
TOTAL FLOW VOLUME(INCH)...........       0.240       0.263       0.043       0.247       0.263       0.263       0.263       0.258
TOTAL MASS LOAD(LBS)..............     768.000 ***********    1140.000  135000.000  140000.000   11500.000      25.600     118.000
CONCENTRATION(LBS/AC-IN)..........       3.220 ***********      26.700     550.000     536.000      44.000       0.098       0.459

                                        630         956        70506
                                      NO2&NO3      SILICA     SOL. PO4-
                                      N-TOTAL       SIO2      T P-COL
                                        MG/L        MG/L        MG/L
                                      --------    --------    --------
MEAN..............................       1.570      82.800       0.075
STANDARD DEVIATION................       0.614     101.000       0.020
COEF. OF VARIATION................       0.391       1.222       0.263
PARAMETER RANGE
          MIN.....................       0.100       2.400       0.005
          MAX.....................       4.400     402.000       0.650
# OF EVENTS.......................           8           8           8
TOTAL FLOW VOLUME(INCH)...........       0.263       0.263       0.262
TOTAL MASS LOAD(LBS)..............      92.800    4890.000       4.430
CONCENTRATION(LBS/AC-IN)..........       0.356      18.800       0.017
```

*** TABLE X - 46. ***

```
                                   ********************************
                                   *      SUMMARY OF EVENTS       *
                                   ********************************
                                   *      CATCHMENT FILE : 32     *
                        *************************************************
                        * CHICAGO, ILLINOIS.  ELMHURST.           (IL 1 7) *
                        *************************************************
                        *   STORM SEWERED AREA      CATCHMENT AREA 601.60 ACRES *
                        *************************************************


                            RAINFALL                                                FLOW
                            --------                                                ----

EVENT  RAIN  DATE(START-END)   DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN    (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                 IN/HR IN/HR  HRS                                                 CFS
-----  ----  ---------------   --------  ------  ----  ----   ----- ---------------   --------   ------   ------   ----  ----

  1    123    77/ 4/20 14: 0     2.00    0.190  0.095  0.36   0.92  77/ 4/20 14:20     2.25     0.034    0.180   16.60
              77/ 4/20 16: 0                                        77/ 4/20 16:35

  2    123    77/ 5/21 11:30     4.83    0.100  0.021  0.48   4.50  77/ 5/21 15:15     1.42     0.007    0.069    4.00
              77/ 5/21 16:20                                        77/ 5/21 16:40

  3    123    77/ 5/31  1:20     1.33    0.750  0.563  4.44   0.92  77/ 5/31  1:50     0.92     0.077    0.103   89.00
              77/ 5/31  2:40                                        77/ 5/31  2:45

  4    123    77/ 6/ 8 12:10     3.08    0.230  0.075  1.44   2.58  77/ 6/ 8 14:30     1.17     0.018    0.077   14.00
              77/ 6/ 8 15:15                                        77/ 6/ 8 15:40

  5    123    77/ 6/30  7:15     0.50    0.440  0.880  1.63   0.50  77/ 6/30  7:25     0.34     0.009    0.020   30.00
              77/ 6/30  7:45                                        77/ 6/30  7:45

  6    123    77/ 7/ 8 16:50     0.50    0.330  0.660  1.22   0.50  77/ 7/ 8 17: 0     1.00     0.028    0.086   23.40
              77/ 7/ 8 17:20                                        77/ 7/ 8 18: 0

  7    123    77/ 7/17  1:45     0.91    0.180  0.197  0.70   0.75  77/ 7/17  2: 0     0.91     0.009    0.048    8.00
              77/ 7/17  2:40                                        77/ 7/17  2:55
```

*** TABLE X - 47. ***

```
                                      ******************************
                                      *    STATISTICAL SUMMARY     *
                                      ******************************
                                      *    CATCHMENT FILE : 32     *
                          **************************************************
                          * CHICAGO, ILLINOIS.  ELMHURST.          (IL 1 7) *
                          **************************************************
                          *   STORM SEWERED AREA      CATCHMENT AREA  601.60 ACRES *
                          **************************************************

                                  310        403        500        530        535        610        625        630
                                  BOD        LAB      RESIDUE    RESIDUE    RESIDUE     NH3-N     TOT KJEL   NO2&NO3
                                 5 DAY        PH       TOTAL     TOT NFLT   VOL NFLT    TOTAL        N      N-TOTAL
                                 MG/L         SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                               --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................  17.200      7.730   1170.000    925.000     70.600      0.552      1.580      1.330
STANDARD DEVIATION.............   2.740      0.299    567.000    570.000     30.600      0.181      0.460      0.500
COEF. OF VARIATION.............   0.159      0.039      0.483      0.616      0.433      0.329      0.292      0.375
PARAMETER RANGE
           MIN.................   6.000      6.600    228.000     88.000      8.000      0.100      0.500      0.500
           MAX.................  38.000      8.400   3960.000   3220.000    262.000      1.300      3.600      2.900
# OF EVENTS....................       7          7          7          7          7          7          7          7
TOTAL FLOW VOLUME(INCH)........   0.162      0.168      0.168      0.168      0.168      0.168      0.168      0.168
TOTAL MASS LOAD(LBS)...........  380.000 ********** 26900.000  21200.000   1620.000     12.700     36.200     30.600
CONCENTRATION(LBS/AC-IN).......   3.900  **********   266.000    210.000     16.000      0.125      0.358      0.302

                                  956       70506
                                 SILICA    SOL PO4-
                                  SIO2     T P-COL
                                  MG/L       MG/L
                               --------   --------
MEAN...........................  34.300      0.050
STANDARD DEVIATION.............  19.100      0.013
COEF. OF VARIATION.............   0.557      0.259
PARAMETER RANGE
           MIN.................   3.900      0.006
           MAX.................  69.200      0.110
# OF EVENTS....................       7          7
TOTAL FLOW VOLUME(INCH)........   0.168      0.168
TOTAL MASS LOAD(LBS)...........  788.000      1.160
CONCENTRATION(LBS/AC-IN).......   7.780      0.011
```

*** TABLE X - 48. ***

```
              *******************************
              *        SUMMARY OF EVENTS    *
              *******************************
              *        CATCHMENT FILE : 33  *
*************************************************************
* CHICAGO, ILLINOIS.  SPRINGINGSOUTH ROAD.         (IL 1 8) *
*************************************************************
*    STORM SEVERED AREA        CATCHMENT AREA 1491.20 ACRES *
*************************************************************


                                     RAINFALL                                  FLOW
                                     --------                                  ----

EVENT  RAIN  DATE(START-END)   DURATION  VOLUME AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)   (INCH) RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)   COEFF.  FLOW  DAYS
                                                IN/HR IN/HR  HRS                                               CFS
-----  ----  ---------------   --------  ------ ----  ----   ----- ---------------   --------   ------   ------  ----  ----

   1    123   77/ 6/30  7:10     2.84     1.260 0.444 2.56    2.84  77/ 6/30  7:10     2.84      0.011    0.008  5.70
              77/ 6/30 10: 0                                        77/ 6/30 10: 0

   2    123   77/ 7/ 8 12:10     5.34     0.180 0.034 0.93    6.84  77/ 7/ 8 12:10     6.84      0.023    0.129  5.90
              77/ 7/ 8 17:30                                        77/ 7/ 8 19: 0

   3    123   77/ 7/12  7:55     2.67     0.120 0.045 0.58    0.59  77/ 7/12  7:55     2.84      0.010    0.080  5.30
              77/ 7/12 10:35                                        77/ 7/12 10:45

   4    123   77/ 7/17  1:30     1.91     0.220 0.115 0.73    0.50  77/ 7/17  1:30     3.00      0.011    0.050  5.80
              77/ 7/17  3:25                                        77/ 7/17  4:30
```

*** TABLE X - 49. ***

```
                                    ******************************
                                    *     STATISTICAL SUMMARY    *
                                    ******************************
                                    *     CATCHMENT FILE : 33    *
                         ****************************************************
                         * CHICAGO, ILLINOIS.  SPRINGINGSOUTH ROAD.  (IL 1 8) *
                         ****************************************************
                         *  STORM SEWERED AREA     CATCHMENT AREA 1491.20 ACRES *
                         ****************************************************

                                   310        403        500        530        535        610        625        630
                                   BOD        LAB      RESIDUE    RESIDUE    RESIDUE    NH3-N    TOT KJEL   NO2&NO3
                                  5 DAY       PH       TOTAL     TOT NFLT   VOL NFLT    TOTAL        N      N-TOTAL
                                   MG/L       SU        MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                 --------   --------   --------   --------   --------   --------   --------   --------
MEAN..........................    16.300      7.500    489.000     90.400     13.400      0.353      1.330      0.675
STANDARD DEVIATION............     1.310      0.268     60.700     75.500      4.230      0.054      0.268      0.066
COEF. OF VARIATION............     0.080      0.036      0.124      0.835      0.316      0.153      0.201      0.098
PARAMETER RANGE
          MIN.................    11.000      6.800    274.000     23.000      4.000      0.100      0.700      0.300
          MAX.................    36.000      7.900    706.000    420.000     30.000      0.800      2.300      1.100
# OF EVENTS...................         3          4          4          4          4          4          4          4
TOTAL FLOW VOLUME(INCH).......     0.030      0.033      0.033      0.033      0.033      0.033      0.033      0.033
TOTAL MASS LOAD(LBS)..........   164.000 **********   5380.000    995.000    151.000      3.880     14.700      7.420
CONCENTRATION(LBS/AC-IN)......     3.700 **********    111.000     20.500      3.040      0.080      0.302      0.153

                                   956       70506
                                 SILICA     SOL PO4-
                                  SIO2      T P-COL
                                  MG/L       MG/L
                                 --------   --------
MEAN..........................     5.800      0.131
STANDARD DEVIATION............     3.630      0.015
COEF. OF VARIATION............     0.626      0.113
PARAMETER RANGE
          MIN.................     2.700      0.045
          MAX.................    18.800      0.220
# OF EVENTS...................         4          4
TOTAL FLOW VOLUME(INCH).......     0.033      0.033
TOTAL MASS LOAD(LBS)..........    63.800      1.440
CONCENTRATION(LBS/AC-IN)......     1.310      0.030
```

*** TABLE X - 50. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 34

CHICAGO, ILLINOIS. PARK FOREST SOUTH. (IL 1 9)

STORM SEWERED AREA CATCHMENT AREA 160.00 ACRES

			RAINFALL					FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	77/ 5/ 4 20:45 77/ 5/ 4 22: 0	1.25	0.800	0.640	2.40	0.75	77/ 5/ 4 20:45 77/ 5/ 4 22: 5	1.33	0.087	0.108	25.00	
2	123	77/ 6/17 14:35 77/ 6/17 15:50	1.25	0.060	0.048	0.36	0.67	77/ 6/17 14:55 77/ 6/17 16: 5	1.17	0.003	0.058	0.74	
3	123	77/ 6/30 7:25 77/ 6/30 8:25	1.00	0.530	0.530	2.68	0.34	77/ 6/30 7:25 77/ 6/30 8:25	1.00	0.044	0.084	15.00	
4	123	77/ 7/ 8 19: 5 77/ 7/ 8 19:25	0.33	0.500	1.506	2.09	0.33	77/ 7/ 8 19: 5 77/ 7/ 8 19:25	0.33	0.015	0.029	16.00	
5	123	77/ 7/12 8:15 77/ 7/12 8:45	0.50	0.590	1.180	2.44	0.08	77/ 7/12 8: 0 77/ 7/12 8:35	0.58	0.042	0.071	18.00	

*** TABLE X - 51. ***

```
                                        ******************************
                                        *     STATISTICAL SUMMARY    *
                                        ******************************
                                        *     CATCHMENT FILE : 34    *
                             ************************************************
                             * CHICAGO, ILLINOIS.  PARK FOREST SOUTH.    (IL 1 9) *
                             ************************************************
                             *   STORM SEWERED AREA      CATCHMENT AREA  160.00 ACRES *
                             ************************************************

                                 310        403        500        530        535        610        625        630
                                 BOD        LAB      RESIDUE    RESIDUE    RESIDUE    NH3-N    TOT KJEL    NO2&NO3
                                5 DAY        PH       TOTAL     TOT NFLT   VOL NFLT    TOTAL       N       N-TOTAL
                                MG/L         SU        MG/L       MG/L       MG/L       MG/L      MG/L       MG/L
                              --------   --------   --------   --------   --------   --------   --------   --------
MEAN..........................  13.300      7.510   1490.000   1340.000    104.000      0.608      1.950      0.669
STANDARD DEVIATION............   3.210      0.288    466.000    485.000     39.700      0.226      0.662      0.137
COEF. OF VARIATION............   0.240      0.038      0.313      0.362      0.382      0.373      0.340      0.205
PARAMETER RANGE
          MIN.................   6.000      6.500    524.000    130.000     20.000      0.100      1.000      0.500
          MAX.................  28.000      8.500   3210.000   2780.000    240.000      2.200      7.400      1.800
# OF EVENTS...................       4          4          4          4          4          5          4          4
TOTAL FLOW VOLUME(INCH).......   0.147      0.147      0.147      0.147      0.147      0.170      0.147      0.147
TOTAL MASS LOAD(LBS)..........  71.200 **********   7960.000   7150.000    554.000      3.740     10.400      3.570
CONCENTRATION(LBS/AC-IN)......   3.020 **********    338.000    303.000     23.500      0.138      0.442      0.152

                                 956       70506
                               SILICA    SOL PO4-
                                SIO2     T P-COL
                                MG/L       MG/L
                              --------   --------
MEAN..........................  35.200      0.252
STANDARD DEVIATION............  11.700      0.078
COEF. OF VARIATION............   0.333      0.307
PARAMETER RANGE
          MIN.................   6.400      0.060
          MAX.................  80.600      0.635
# OF EVENTS...................       4          4
TOTAL FLOW VOLUME(INCH).......   0.147      0.147
TOTAL MASS LOAD(LBS).......... 188.000      1.350
CONCENTRATION(LBS/AC-IN)......   7.980      0.057
```

*** TABLE X - 52. ***

```
                              *******************************
                              *       SUMMARY OF EVENTS     *
                              *******************************
                              *       CATCHMENT FILE : 35   *
                  ************************************************************
                  * CHICAGO, ILLINOIS.  WINSTON VILLAGE.              (IL 110) *
                  ************************************************************
                  *    STORM SEWERED AREA         CATCHMENT AREA   89.60 ACRES *
                  ************************************************************


                          RAINFALL                                             FLOW
                          --------                                             ----

EVENT  RAIN  DATE(START-END)      DURATION  VOLUME  AVG    PEAK   BASIN DATE(START-END)      DURATION   VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)    (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN      (HRS)      (INCH)  COEFF.  FLOW  DAYS
                                                    IN/HR  IN/HR  HRS                                                   CFS
-----  ----  ---------------      --------  ------  -----  -----  ----- ---------------      --------   ------  ------  ----  ----


  1    123     77/ 4/28  6: 0      3.58     0.230  0.064   0.24    3.58  77/ 4/28  6: 0      3.58      0.068   0.294   2.90
               77/ 4/28  9:35                                            77/ 4/28  9:35

  2    123     77/ 5/ 4 11:30      9.08     0.050  0.006   0.24    9.08  77/ 5/ 4 11:30      9.08      0.060   1.205   0.75
               77/ 5/ 4 20:35                                            77/ 5/ 4 20:35
```

*** TABLE X - 53. ***

```
                                   ******************************
                                   *     STATISTICAL SUMMARY    *
                                   ******************************
                                   *     CATCHMENT FILE : 35    *
                        **********************************************************
                        * CHICAGO, ILLINOIS.  WINSTON VILLAGE.           (IL 110) *
                        **********************************************************
                        *    STORM SEWERED AREA        CATCHMENT AREA   89.60 ACRES *
                        **********************************************************

                               310        403        500        530        535        610        625        630
                               BOD        LAB      RESIDUE    RESIDUE    RESIDUE     NH3-N    TOT KJEL   NO2&NO3
                              5 DAY        PH       TOTAL     TOT NFLT   VOL NFLT    TOTAL        N      N-TOTAL
                              MG/L         SU        MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                            --------   --------   --------   --------   --------   --------   --------   --------
MEAN.......................    8.400      7.610    774.000    496.000     41.700      0.623      1.440      1.340
STANDARD DEVIATION.........    0.129      0.143    416.000    474.000     41.000      0.238      0.331      0.122
COEF. OF VARIATION.........    0.015      0.019      0.538      0.954      0.983      0.382      0.230      0.092
PARAMETER RANGE
         MIN...............    6.000      6.500    444.000     93.000      9.000      0.400      1.100      0.800
         MAX...............   18.000      8.200   4220.000   3480.000    284.000      2.200      5.700      1.700
# OF EVENTS................        2          2          2          2          2          2          2          2
TOTAL FLOW VOLUME(INCH)....    0.028      0.028      0.028      0.028      0.028      0.028      0.028      0.028
TOTAL MASS LOAD(LBS).......    4.810 **********    443.000    284.000     23.900      0.357      0.825      0.764
CONCENTRATION(LBS/AC-IN)...    1.900 **********    175.000    112.000      9.460      0.141      0.327      0.303

                               956       70506
                             SILICA     SOL PO4-
                              SIO2      T P-COL
                              MG/L       MG/L
                            --------   --------
MEAN.......................   20.100      0.126
STANDARD DEVIATION.........    3.910      0.020
COEF. OF VARIATION.........    0.195      0.162
PARAMETER RANGE
         MIN...............    5.200      0.075
         MAX...............   48.800      0.235
# OF EVENTS................        2          2
TOTAL FLOW VOLUME(INCH)....    0.028      0.028
TOTAL MASS LOAD(LBS).......   11.500      0.072
CONCENTRATION(LBS/AC-IN)...    4.550      0.029
```

*** TABLE X - 54. ***

```
                                        ******************************
                                        *      SUMMARY OF EVENTS     *
                                        ******************************
                                        *      CATCHMENT FILE : 36   *
                              ************************************************
                              * CHICAGO, ILLINOIS.  FLAGG CREEK.    (IL 111) *
                              ************************************************
                              *   STORM SEWERED AREA  CATCHMENT AREA 972.80 ACRES *
                              ************************************************


                               RAINFALL                                            FLOW
                               --------                                            ----

EVENT RAIN DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK DRY
      GAGE YR,MON,D,HR,MIN     (HRS)   (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)  COEFF.  FLOW DAYS
                                               IN/HR  IN/HR  HRS                                               CFS
----- ---- ---------------   --------  ------  ----   ----   ----- ---------------   --------  ------  ------  ---- ----


  1   123    77/ 5/ 4 20:25     3.42   0.750  0.220  2.40    0.83  77/ 5/ 4 20:25     3.42    0.024   0.032  14.00
             77/ 5/ 4 23:50                                        77/ 5/ 4 23:50

  2   123    77/ 5/21 14:45     0.25   0.360  1.440  0.96    0.67  77/ 5/21 14:45     2.92    0.023   0.064  15.00
             77/ 5/21 15: 0                                        77/ 5/21 17:40

  3   123    77/ 5/31  0:45     3.92   0.600  0.153  2.28    0.42  77/ 5/31  0:45     4.50    0.017   0.029  10.00
             77/ 5/31  4:40                                        77/ 5/31  5:15

  4   123    77/ 6/11  1:40     3.75   0.900  0.240  1.92    0.08  77/ 6/11  0: 5     5.42    0.021   0.024  42.00
             77/ 6/11  5:25                                        77/ 6/11  5:30
```

*** TABLE X - 55. ***

```
                                                        ************************************
                                                        *       STATISTICAL SUMMARY        *
                                                        ************************************
                                                        *       CATCHMENT FILE : 36        *
                                        **********************************************************************
                                        * CHICAGO, ILLINOIS.  FLAGG CREEK.                          (IL 111) *
                                        **********************************************************************
                                        *    STORM SEVERED AREA                 CATCHMENT AREA  972.80 ACRES *
                                        **********************************************************************

                                          310         403         500         530         535         610         625         630
                                          BOD         LAB       RESIDUE     RESIDUE     RESIDUE      NH3-N     TOT KJEL     NO2&NO3
                                         5 DAY         PH        TOTAL     TOT NFLT    VOL NFLT      TOTAL        N        N-TOTAL
                                         MG/L          SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                       --------    --------    --------    --------    --------    --------    --------    --------
MEAN................................      20.100       7.560    1060.000     673.000      93.500       0.958       2.960       1.650
STANDARD DEVIATION..................       2.230       0.205     195.000     154.000      18.200       0.179       0.486       0.555
COEF. OF VARIATION..................       0.111       0.027       0.184       0.229       0.195       0.187       0.164       0.337
PARAMETER RANGE
         MIN........................      10.000       6.400     391.000      72.000       2.000       0.500       1.100       0.900
         MAX........................      51.000       8.400    2610.000    1660.000     215.000       2.300       8.000       4.000
# OF EVENTS.........................           4           4           4           4           4           4           4           4
TOTAL FLOW VOLUME(INCH).............       0.056       0.056       0.056       0.056       0.056       0.056       0.056       0.056
TOTAL MASS LOAD(LBS)................     246.000  ##########   13000.000    8240.000    1150.000      11.700      36.300      20.200
CONCENTRATION(LBS/AC-IN)............       4.560  ##########     240.000     152.000      21.200       0.217       0.672       0.373

                                          956        70506
                                        SILICA     SOL PO4-
                                         SIO2       T P-COL
                                         MG/L        MG/L
                                       --------    --------
MEAN................................      10.700       0.278
STANDARD DEVIATION..................       0.932       0.050
COEF. OF VARIATION..................       0.087       0.179
PARAMETER RANGE
         MIN........................       4.300       0.125
         MAX........................      27.300       0.525
# OF EVENTS.........................           4           4
TOTAL FLOW VOLUME(INCH).............       0.056       0.056
TOTAL MASS LOAD(LBS)................     131.000       3.400
CONCENTRATION(LBS/AC-IN)............       2.430       0.063
```

*** TABLE X - 56. ***

```
                         ***************************
                         *      SUMMARY OF EVENTS  *
                         ***************************
                         *      CATCHMENT FILE : 37  *
               ************************************************
               * CHICAGO, ILLINOIS.  PERRY ROAD.         (IL 112) *
               ************************************************
               *   STORM SEWERED AREA     CATCHMENT AREA 4435.20 ACRES *
               ************************************************


                               RAINFALL                                                FLOW
                               --------                                                ----

EVENT RAIN DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.  FLOW  DAYS
                                                IN/HR IN/HR  HRS                                                  CFS
----- ---- ---------------  --------  ------  ----  ----   ----- ---------------    --------   ------   ------  ----  ----


  1   123   77/ 6/ 5  4:25    3.42    1.190  0.348  2.40    3.58 77/ 6/ 5  4:30     4.50      0.013    0.011  24.00
            77/ 6/ 5  7:50                                       77/ 6/ 5  9: 0

  2   123   77/ 6/11  5: 5    2.58    0.600  0.232  0.84    2.58 77/ 6/11  4:30     3.75      0.006    0.011  16.00
            77/ 6/11  7:40                                       77/ 6/11  8:15

  3   123   77/ 6/17 19: 5    1.92    0.490  0.256  1.44    3.08 77/ 6/17  0:10    24.42      0.014    0.029  22.00
            77/ 6/17 21: 0                                       77/ 6/18  0:35

  4   123   77/ 6/30  6:40    4.00    1.890  0.473  3.29    5.09 77/ 6/30  6:45     5.00      0.008    0.004  32.00
            77/ 6/30 10:40                                       77/ 6/30 11:45

  5   123   77/ 7/18  8:20    2.00    0.960  0.480  1.34    3.50 77/ 7/18  9: 5     4.75      0.004    0.004  11.00
            77/ 7/18 10:20                                       77/ 7/18 13:50
```

*** TABLE X - 57. ***

```
***************************************
*      STATISTICAL SUMMARY            *
***************************************
*      CATCHMENT FILE : 37            *
*************************************************************
* CHICAGO, ILLINOIS.  PERRY ROAD.                (IL 112) *
*************************************************************
*   STORM SEWERED AREA        CATCHMENT AREA 4435.20 ACRES *
*************************************************************
```

	310 BOD 5 DAY MG/L	403 LAB PH SU	500 RESIDUE TOTAL MG/L	530 RESIDUE TOT NFLT MG/L	535 RESIDUE VOL NFLT MG/L	610 NH3-N TOTAL MG/L	625 TOT KJEL N MG/L	630 NO2&NO3 N-TOTAL MG/L
MEAN..............................	16.000	7.510	1750.000	1480.000	169.000	0.414	3.820	4.550
STANDARD DEVIATION..............	7.440	0.150	497.000	575.000	42.800	0.215	1.170	2.590
COEF. OF VARIATION..............	0.464	0.020	0.284	0.387	0.253	0.519	0.307	0.569
PARAMETER RANGE								
MIN...................	5.000	7.100	536.000	236.000	20.000	0.100	1.000	0.500
MAX...................	34.000	8.100	3840.000	3830.000	342.000	1.100	9.500	12.000
# OF EVENTS.....................	5	5	5	5	5	5	5	5
TOTAL FLOW VOLUME(INCH).........	0.039	0.040	0.040	0.040	0.040	0.040	0.040	0.040
TOTAL MASS LOAD(LBS)............	631.000	**********	70200.000	59700.000	6790.000	16.700	154.000	183.000
CONCENTRATION(LBS/AC-IN)........	3.630	**********	396.000	336.000	38.300	0.094	0.866	1.030

	956 SILICA SIO2 MG/L	70506 SOL PO4- T P-COL MG/L
MEAN..............................	31.700	0.397
STANDARD DEVIATION..............	25.200	0.126
COEF. OF VARIATION..............	0.794	0.319
PARAMETER RANGE		
MIN...................	3.100	0.145
MAX...................	126.000	0.840
# OF EVENTS.....................	5	5
TOTAL FLOW VOLUME(INCH).........	0.040	0.040
TOTAL MASS LOAD(LBS)............	1270.000	16.000
CONCENTRATION(LBS/AC-IN)........	7.180	0.090

*** TABLE X - 58. ***

```
                                  ***********************************
                                  *       SUMMARY OF EVENTS         *
                                  ***********************************
                                  *       CATCHMENT FILE : 38       *
                      *******************************************************************
                      * CHICAGO, ILLINOIS.  BEECHER-PEOTONE ROAD.              (IL 113) *
                      *******************************************************************
                      *   STORM SEWERED AREA          CATCHMENT AREA 2617.60 ACRES      *
                      *******************************************************************


                           RAINFALL                                           FLOW
                           --------                                           ----

EVENT RAIN DATE(START-END)   DURATION VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)    (INCH)  COEFF.  FLOW DAYS
                                              IN/HR IN/HR  HRS                                             CFS
----- ---- ---------------  -------- ------ ----- -----  ----- ---------------  --------  ------  ------  ---- ----

  1   123   77/ 6/ 5  5:40    6.67   1.360  0.204  1.92   7.33  77/ 6/ 5  5:40    7.33     0.007   0.005  3.20
            77/ 6/ 5 12:20                                      77/ 6/ 5 13: 0

  2   123   77/ 6/11  3:35    5.58   0.720  0.129  1.68   6.50  77/ 6/11  3:35    7.92     0.009   0.013  4.00
            77/ 6/11  9:10                                      77/ 6/11 11:30

  3   123   77/ 6/18  0:15    1.08   0.220  0.203  0.48   3.50  77/ 6/18  0: 5    3.67     0.005   0.023  3.70
            77/ 6/18  1:20                                      77/ 6/18  3:45

  4   123   77/ 6/30 10:45    8.83   0.920  0.104  1.22  13.25  77/ 6/30 10:45   13.25     0.025   0.028  9.60
            77/ 6/30 19:35                                      77/ 6/30 24: 0
```

*** TABLE X - 59. ***

```
                            ********************************
                            *      STATISTICAL SUMMARY     *
                            ********************************
                            *      CATCHMENT FILE : 38     *
                  **************************************************************
                  * CHICAGO, ILLINOIS.  BEECHER-PEOTONE ROAD.          (IL 113) *
                  **************************************************************
                  *    STORM SEWERED AREA         CATCHMENT AREA 2617.60 ACRES *
                  **************************************************************


                                   310        403        500        530        535        610        625        630
                                   BOD        LAB      RESIDUE    RESIDUE    RESIDUE     NH3-N    TOT KJEL    NO2&NO3
                                  5 DAY        PH       TOTAL     TOT NFLT   VOL NFLT    TOTAL        N       N-TOTAL
                                  MG/L         SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                --------   --------   --------   --------   --------   --------   --------   --------
MEAN..........................    15.700      7.770    652.000    223.000     44.600      0.471      4.170      4.820
STANDARD DEVIATION............     5.540      0.072     40.700     87.600      6.410      0.193      2.180      1.740
COEF. OF VARIATION............     0.354      0.009      0.062      0.392      0.144      0.410      0.523      0.361
PARAMETER RANGE
          MIN.................     5.000      7.300    504.000     70.000     19.000      0.100      1.300      1.400
          MAX.................    36.000      8.100    902.000    535.000    125.000      1.400     12.900      9.800
# OF EVENTS...................         3          3          3          3          3          3          3          3
TOTAL FLOW VOLUME(INCH).......     0.011      0.011      0.011      0.011      0.011      0.011      0.011      0.011
TOTAL MASS LOAD(LBS)..........   101.000 **********   4220.000   1440.000    288.000      2.980     27.000     31.200
CONCENTRATION(LBS/AC-IN)......     3.550 **********    148.000     50.600     10.100      0.107      0.946      1.090


                                   956       70506
                                  SILICA    SOL PO4-
                                   SIO2     T P-COL
                                   MG/L      MG/L
                                --------   --------
MEAN..........................    16.300      0.297
STANDARD DEVIATION............     8.630      0.158
COEF. OF VARIATION............     0.530      0.531
PARAMETER RANGE
          MIN.................     4.100      0.070
          MAX.................    70.500      0.880
# OF EVENTS...................         3          3
TOTAL FLOW VOLUME(INCH).......     0.011      0.011
TOTAL MASS LOAD(LBS)..........   105.000      1.920
CONCENTRATION(LBS/AC-IN)......     3.690      0.067
```

*** TABLE X - 60. ***

```
                                  ***********************************
                                  *        SUMMARY OF EVENTS        *
                                  ***********************************
                                  *        CATCHMENT FILE : 39      *
                    ***********************************************************
                    * CHICAGO, ILLINOIS.  OLCOTT ROAD.               (IL 114) *
                    ***********************************************************
                    *   STORM SEWERED AREA       CATCHMENT AREA 3456.00 ACRES *
                    ***********************************************************


                         RAINFALL                                              FLOW
                         --------                                              ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)   (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.  FLOW  DAYS
                                                   IN/HR  IN/HR  HRS                                                  CFS
-----  ----  ---------------     --------  ------  -----  -----  ----- ---------------    --------   ------   ------  ----  ----


  1    123    77/ 7/18  4:10      5.84     1.210   0.207  1.71   6.17  77/ 7/18  4:10      7.92      0.002    0.002   1.20
              77/ 7/18 10: 0                                           77/ 7/18 12: 5

  2    123    77/ 7/21  9:15      2.25     0.960   0.427  1.46   3.33  77/ 7/21  9:15      7.00      0.002    0.002   1.10
              77/ 7/21 11:30                                           77/ 7/21 16:15
```

*** TABLE X - 61. ***

```
                                    ******************************
                                    *     STATISTICAL SUMMARY    *
                                    ******************************
                                    *      CATCHMENT FILE : 39   *
                      ************************************************
                      * CHICAGO, ILLINOIS.  OLCOTT ROAD.          (IL 114) *
                      ************************************************
                      *    STORM SEWERED AREA       CATCHMENT AREA 3456.00 ACRES *
                      ************************************************

                                      310        403        500        530        535        610        625        630
                                      BOD        LAB     RESIDUE    RESIDUE    RESIDUE     NH3-N    TOT KJEL   NO2&NO3
                                     5 DAY        PH      TOTAL     TOT NFLT   VOL NFLT    TOTAL        N      N-TOTAL
                                      MG/L        SU       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................    7.080      8.080    491.000     47.900      9.590      0.100      0.378      0.814
STANDARD DEVIATION................    0.777      0.155     21.200     28.000      7.340      0.000      0.130      0.443
COEF. OF VARIATION................    0.110      0.019      0.043      0.585      0.765      0.002      0.343      0.544
PARAMETER RANGE
          MIN.....................    4.000      7.600    432.000     14.000      1.000      0.100      0.100      0.300
          MAX.....................   17.000      8.300    570.000    125.000     33.000      0.100      0.700      1.600
# OF EVENTS.......................        2          2          2          2          2          2          2          2
TOTAL FLOW VOLUME(INCH)...........    0.002      0.002      0.002      0.002      0.002      0.002      0.002      0.002
TOTAL MASS LOAD(LBS)..............    8.950 **********    603.000     60.400     12.100      0.126      0.477      1.030
CONCENTRATION(LBS/AC-IN)..........    1.610 **********    111.000     10.800      2.170      0.023      0.086      0.184

                                      956      70506
                                    SILICA    SOL PO4-
                                     SIO2     T P-COL
                                     MG/L       MG/L
                                   --------   --------
MEAN..............................    9.560      0.028
STANDARD DEVIATION................    1.710      0.004
COEF. OF VARIATION................    0.179      0.145
PARAMETER RANGE
          MIN.....................    6.000      0.015
          MAX.....................   11.400      0.050
# OF EVENTS.......................        2          2
TOTAL FLOW VOLUME(INCH)...........    0.001      0.002
TOTAL MASS LOAD(LBS)..............   11.200      0.035
CONCENTRATION(LBS/AC-IN)..........    2.170      0.006
```

*** TABLE X - 62. ***

```
                                  ******************************
                                  *      SUMMARY OF EVENTS     *
                                  ******************************
                                  *      CATCHMENT FILE : 40   *
                   ************************************************************
                   * CHICAGO, ILLINOIS.  PIONEER WOODS.               (IL 115) *
                   ************************************************************
                   *    STORM SEWERED AREA        CATCHMENT AREA 2304.00 ACRES *
                   ************************************************************


                          RAINFALL                                          FLOW
                          --------                                          ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)     DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN     (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                    CFS
-----  ----  ---------------     --------  ------  -----  -----   ----- ---------------     --------   ------   ------   ----  ----

  1    123     77/ 4/19 13:25      6.17     0.370  0.060  0.84     6.17  77/ 4/19 13:25      6.17      0.012    0.033   4.90
               77/ 4/19 19:35                                            77/ 4/19 19:35
```

*** TABLE X - 63. ***

```
                                                   ********************************
                                                   *      STATISTICAL SUMMARY     *
                                                   ********************************
                                                   *      CATCHMENT FILE : 40     *
                                    ***************************************************************
                                    * CHICAGO, ILLINOIS.  PIONEER WOODS.                 (IL 115) *
                                    ***************************************************************
                                    *    STORM SEWERED AREA          CATCHMENT AREA 2304.00 ACRES *
                                    ***************************************************************

                                             310         403         500         530         535         610         625         630
                                             BOD         LAB     RESIDUE     RESIDUE     RESIDUE       NH3-N    TOT KJEL     NO2&NO3
                                           5 DAY          PH       TOTAL    TOT NFLT    VOL NFLT       TOTAL           N     N-TOTAL
                                            MG/L          SU        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                       ---------   ---------   ---------   ---------   ---------   ---------   ---------   ---------
MEAN...............................        1.990       7.770    1040.000      29.500       6.360       0.100       0.432       0.212
STANDARD DEVIATION.................        0.004       0.000       2.240       0.070       0.014       0.000       0.001       0.000
COEF. OF VARIATION.................        0.002       0.000       0.002       0.002       0.002       0.002       0.002       0.002
PARAMETER RANGE
          MIN......................        1.000       7.700    1010.000      20.000       3.000       0.100       0.200       0.100
          MAX......................        3.670       7.800    1070.000      51.000      13.000       0.100       0.600       0.400
# OF EVENTS........................            1           1           1           1           1           1           1           1
TOTAL FLOW VOLUME(INCH)............        0.002       0.002       0.002       0.002       0.002       0.002       0.002       0.002
TOTAL MASS LOAD(LBS)...............        2.320  **********    1220.000      34.400       7.420       0.117       0.504       0.247
CONCENTRATION(LBS/AC-IN)...........        0.451  **********     236.000       6.700       1.440       0.023       0.098       0.048

                                             956       70506
                                          SILICA    SOL PO4-
                                            SIO2     T P-COL
                                            MG/L        MG/L
                                       ---------   ---------
MEAN...............................       10.300       0.040
STANDARD DEVIATION.................        0.021       0.000
COEF. OF VARIATION.................        0.002       0.002
PARAMETER RANGE
          MIN......................        9.900       0.035
          MAX......................       10.800       0.060
# OF EVENTS........................            1           1
TOTAL FLOW VOLUME(INCH)............        0.002       0.002
TOTAL MASS LOAD(LBS)...............       12.100       0.047
CONCENTRATION(LBS/AC-IN)...........        2.340       0.009
```

*** TABLE X - 64. ***

```
                                              ******************************
                                              *      SUMMARY OF EVENTS     *
                                              ******************************
                                              *      CATCHMENT FILE : 41   *
                                  **********************************************************
                                  * CHICAGO, ILLINOIS.  ALDEN ROAD.                (IL 116) *
                                  **********************************************************
                                  *   STORM SEWERED AREA      CATCHMENT AREA 4000.00 ACRES *
                                  **********************************************************


                                    RAINFALL                                        FLOW
                                    --------                                        ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR IN/HR   HRS                                                  CFS
-----  ----  ---------------    --------  ------  ----  ----    ----- ---------------   --------   ------   ------   ----  ----


  1    123     77/ 6/17 17:25     2.42    1.130  0.468  3.35    6.58  77/ 6/17 17:25     6.58      0.001    0.001    0.59
               77/ 6/17 19:50                                         77/ 6/17 24: 0
```

*** TABLE X - 65. ***

```
                                        ******************************
                                        *      SUMMARY OF EVENTS     *
                                        ******************************
                                        *      CATCHMENT FILE : 42   *
                              ************************************************
                              * CHICAGO, ILLINOIS.  HAWTHORN CENTER.     (IL 117) *
                              ************************************************
                              *   STORM SEWERED AREA      CATCHMENT AREA   96.00 ACRES *
                              ************************************************

                                   RAINFALL                                            FLOW
                                   --------                                            ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.  FLOW  DAYS
                                                   IN/HR IN/HR  HRS                                                  CFS
-----  ----  ---------------     --------  ------  ----  ----   ----- ---------------    --------   ------   ------  ----  ----

  1    123     77/ 7/16  0:15      0.02    0.010  0.600  0.00   0.50  77/ 7/16  0:15      1.25      0.013    1.331   1.30
               77/ 7/16  0:15                                         77/ 7/16  1:30

  2    123     77/ 7/17  1:25      1.00    0.060  0.060  0.12   1.09  77/ 7/17  1:25      1.09      0.016    0.272   2.70
               77/ 7/17  2:25                                         77/ 7/17  2:30

  3    123     77/ 7/21 10:40      1.25    0.100  0.080  0.24   1.25  77/ 7/21 10:40      1.25      0.022    0.219   8.60
               77/ 7/21 11:55                                         77/ 7/21 11:55
```

*** TABLE X - 66. ***

```
                                   ******************************
                                   *     STATISTICAL SUMMARY    *
                                   ******************************
                                   *     CATCHMENT FILE : 42    *
                      ********************************************************
                      * CHICAGO, ILLINOIS.  HAWTHORN CENTER.           (IL 117) *
                      ********************************************************
                      *    STORM SEWERED AREA        CATCHMENT AREA   96.00 ACRES *
                      ********************************************************

                                 310        403        410        500        530        535        610        625
                                 BOD        LAB       T ALK    RESIDUE    RESIDUE    RESIDUE     NH3-N    TOT KJEL
                                5 DAY        PH       CACO3      TOTAL    TOT NFLT   VOL NFLT    TOTAL        N
                                 MG/L        SU        MG/L       MG/L       MG/L       MG/L      MG/L       MG/L
                              --------   --------   --------   --------   --------   --------   --------   --------
MEAN..........................  29.400      7.720     66.600    906.000     96.300     23.000      0.277      1.870
STANDARD DEVIATION............   3.680      0.052      0.108    253.000      9.040      9.020      0.094      0.579
COEF. OF VARIATION............   0.125      0.007      0.002      0.279      0.094      0.391      0.338      0.310
PARAMETER RANGE
           MIN................  20.000      7.400     59.000    500.000     26.000      4.000      0.100      1.300
           MAX................  38.000      8.000     85.200   1740.000    195.000     94.000      0.500      4.500
# OF EVENTS...................       3          3          1          3          3          3          3          3
TOTAL FLOW VOLUME(INCH).......   0.041      0.041      0.008      0.041      0.041      0.041      0.041      0.041
TOTAL MASS LOAD(LBS)..........  26.100 **********     11.100    803.000     85.400     20.400      0.246      1.660
CONCENTRATION(LBS/AC-IN)......   6.670 **********     15.100    205.000     21.800      5.220      0.063      0.424

                                 630        956       70506
                               NO2&NO3    SILICA    SOL PO4-
                               N-TOTAL     SIO2     T P-COL
                                 MG/L       MG/L       MG/L
                              --------   --------   --------
MEAN..........................   1.520      4.440      0.413
STANDARD DEVIATION............   0.284      1.260      0.468
COEF. OF VARIATION............   0.187      0.283      1.133
PARAMETER RANGE
           MIN................   1.000      2.700      0.050
           MAX................   2.400      8.800      2.180
# OF EVENTS...................       3          3          3
TOTAL FLOW VOLUME(INCH).......   0.041      0.041      0.041
TOTAL MASS LOAD(LBS)..........   1.350      3.930      0.366
CONCENTRATION(LBS/AC-IN)......   0.345      1.010      0.094
```

*** TABLE X - 67. ***

```
                                   ************************************
                                   *        SUMMARY OF EVENTS         *
                                   ************************************
                                   *       CATCHMENT FILE : 43        *
                      ***********************************************************
                      * CHAMPAIGN, ILLINOIS.  BONEYARD CREEK.            (IL 2 1) *
                      ***********************************************************
                      *   STORM SEWERED AREA       CATCHMENT AREA 2290.00 ACRES *
                      ***********************************************************


                            RAINFALL                                           FLOW
                            --------                                           ----

EVENT RAIN  DATE(START-END)  DURATION VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE  YR,MON,D,HR,MIN   (HRS)   (INCH)  RAIN  RAIN   LAG    YR,MON,D,HR,MIN   (HRS)    (INCH)  COEFF.  FLOW  DAYS
                                              IN/HR IN/HR  HRS                                              CFS
----- ----  ---------------  -------- ------  ----  ----   ----- ---------------  --------  ------  ------  ----  ----

  1   129    60/10/26  2:24    2.70   0.649  0.240  0.70   2.23  60/10/26  3:18    4.00     0.116   0.179  185.00
             60/10/26  5: 6                                       60/10/26  7:18

  2   129    60/11/15 17: 0    3.20   0.840  0.263  0.60   2.75  60/11/15 18: 0    4.50     0.178   0.212  223.00
             60/11/15 20:12                                       60/11/15 22:30

  3   129    60/11/28 10:39    0.80   0.357  0.446  1.40   0.77  60/11/28 10:45    3.00     0.072   0.201  143.00
             60/11/28 11:27                                       60/11/28 13:45

  4   129    61/ 3/ 4 17:30    0.90   0.690  0.767  2.20   0.83  61/ 3/ 4 17:30    3.50     0.138   0.200  235.00
             61/ 3/ 4 18:24                                       61/ 3/ 4 21: 0

  5   129    61/ 6/ 6 16:18    2.40   2.080  0.867  4.80   1.37  61/ 6/ 6 16:30    6.50     0.437   0.210  479.00
             61/ 6/ 6 18:42                                       61/ 6/ 6 23: 0

      128    61/ 6/ 6 16:18    2.40   2.130  0.887  5.10   1.37                                     0.205
             61/ 6/ 6 18:42

      127    61/ 6/ 6 16:30    2.20   2.040  0.927  5.00   1.17                                     0.214
             61/ 6/ 6 18:42

      126    61/ 6/ 6 16:30    2.20   1.700  0.773  2.70   1.17                                     0.257
             61/ 6/ 6 18:42

      125    61/ 6/ 6 16:24    2.30   1.847  0.803  2.30   1.27                                     0.237
             61/ 6/ 6 18:42

  6   129    61/ 9/23 20: 0    1.50   0.391  0.261  2.30   0.66  61/ 9/23 20: 0    2.50     0.081   0.206  175.00
             61/ 9/23 21:30                                       61/ 9/23 22:30

  7   129    62/ 5/10 18: 0    1.90   0.640  0.337  1.60   0.58  62/ 5/10 18: 0    4.00     0.171   0.268  275.00
             62/ 5/10 19:54                                       62/ 5/10 22: 0

      128    62/ 5/10 17:54    2.70   0.610  0.226  1.20   0.68                                     0.281
             62/ 5/10 20:36

      127    62/ 5/10 17:48    2.50   0.710  0.284  1.30   0.78                                     0.242
             62/ 5/10 20:18

      126    62/ 5/10 18:12    1.70   0.600  0.353  1.70   0.38                                     0.286
             62/ 5/10 19:54

      125    62/ 5/10 18: 0    1.50   0.622  0.415  1.50   0.58                                     0.276
             62/ 5/10 19:30

  8   129    62/ 5/26  6: 0    1.60   0.470  0.294  2.70   0.50  62/ 5/26  6: 0    3.50     0.114   0.242  185.00
             62/ 5/26  7:36                                       62/ 5/26  9:30

  9   129    62/ 5/27  6:24    1.50   0.470  0.313  1.40   0.68  62/ 5/27  6:30    3.50     0.090   0.191  128.00
             62/ 5/27  7:54                                       62/ 5/27 10: 0

 10   129    62/ 7/11 15:54    2.70   0.637  0.236  1.90   0.52  62/ 7/11 16: 0    4.00     0.125   0.197  192.00
             62/ 7/11 18:36                                       62/ 7/11 20: 0
```

*** TABLE X - 68. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 43 *

* CHAMPAIGN, ILLINOIS. BONEYARD CREEK. (IL 2 1) *

* STORM SEWERED AREA CATCHMENT AREA 2290.00 ACRES *

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
10	128	62/ 7/11 15:36 62/ 7/11 18:18	2.70	0.649	0.241	1.10	0.82	62/ 7/11 16: 0 62/ 7/11 20: 0	4.00	0.125	0.193	192.00	
	127	62/ 7/11 15:48 62/ 7/11 18:54	3.10	0.589	0.190	1.20	0.62				0.213		
	126	62/ 7/11 15:54 62/ 7/11 18:18	2.40	0.719	0.300	1.50	0.52				0.174		
	125	62/ 7/11 15:54 62/ 7/11 18:48	2.90	0.636	0.220	1.70	0.52				0.197		
11	129	62/ 7/13 13: 6 62/ 7/13 15:12	2.10	0.862	0.410	43.00	1.37	62/ 7/13 13:18 62/ 7/13 18:18	5.00	0.223	0.259	285.60	
	128	62/ 7/13 13: 0 62/ 7/13 15:36	2.60	1.018	0.392	51.50	1.46				0.220		
	127	62/ 7/13 13: 0 62/ 7/13 15:36	2.60	0.811	0.312	41.00	1.46				0.276		
12	129	62/ 8/21 4: 6 62/ 8/21 4:54	0.80	0.707	0.883	1.90	0.73	62/ 8/21 3:10 62/ 8/21 7:40	4.50	0.131	0.185	252.00	
	128	62/ 8/21 4: 6 62/ 8/21 5:30	1.40	0.477	0.340	1.70	0.73				0.274		
	127	62/ 8/21 4: 0 62/ 8/21 5:30	1.50	0.592	0.395	1.60	0.83				0.221		
	126	62/ 8/21 3:36 62/ 8/21 5:18	1.70	0.648	0.382	2.30	1.23				0.202		
	125	62/ 8/21 3:30 62/ 8/21 4:48	1.30	0.794	0.612	2.70	1.33				0.165		
13	129	62/ 9/ 3 14:18 62/ 9/ 3 16:36	2.30	0.767	0.333	1.55	1.54	62/ 9/ 3 14:15 62/ 9/ 3 18:30	4.25	0.120	0.157	219.00	
14	129	63/ 6/10 15:24 63/ 6/10 17: 6	1.70	0.860	0.506	1.40	0.85	63/ 6/10 15:35 63/ 6/10 20: 0	4.42	0.202	0.235	329.00	
15	129	63/ 7/19 23:48 63/ 7/20 0:54	1.10	1.113	1.010	2.10	1.00	63/ 7/19 23:38 63/ 7/20 4:18	4.66	0.246	0.221	388.00	
16	129	63/ 8/28 7:54 63/ 8/28 9:18	1.40	1.080	0.772	2.00	0.80	63/ 8/28 8: 0 63/ 8/28 12:30	4.50	0.280	0.259	410.00	
17	129	64/ 3/ 8 17:54 64/ 3/ 8 19: 6	1.20	0.650	0.542	1.80	1.10	64/ 3/ 8 18: 0 64/ 3/ 8 22:15	4.25	0.166	0.255	262.00	
18	129	64/ 4/18 24: 0 64/ 4/19 13:18	13.30	1.730	0.130	1.50	13.00	64/ 4/19 0:15 64/ 4/19 16:30	16.25	0.535	0.309	265.00	

*** TABLE X - 68. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 43 *

* CHAMPAIGN, ILLINOIS. BONEYARD CREEK. (IL 2 1) *

* STORM SEWERED AREA CATCHMENT AREA 2290.00 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
18	128	64/ 4/18 24: 0 64/ 4/19 13:12	13.20	1.730	0.131	2.20	13.00	64/ 4/19 0:15 64/ 4/19 16:30	16.25	0.535	0.309	265.00	
	127	64/ 4/18 24: 0 64/ 4/19 13:12	13.20	1.770	0.134	3.00	13.00				0.302		
	126	64/ 4/18 24: 0 64/ 4/19 13:12	13.20	1.650	0.125	1.90	13.00				0.324		
	125	64/ 4/18 24: 0 64/ 4/19 13:24	13.40	1.748	0.130	2.20	13.00				0.306		
19	129	64/ 4/20 20:18 64/ 4/21 9:18	13.00	2.810	0.216	2.30	6.70	64/ 4/20 20:30 64/ 4/21 14: 0	17.50	1.377	0.490	507.00	
	128	64/ 4/20 20:12 64/ 4/21 9:18	13.10	3.410	0.260	2.60	6.80				0.404		
	127	64/ 4/20 20:12 64/ 4/21 9: 0	12.80	3.070	0.240	2.00	6.80				0.449		
	126	64/ 4/20 20:12 64/ 4/21 9: 6	12.90	2.980	0.231	2.30	6.80				0.462		
	125	64/ 4/20 20:18 64/ 4/21 8:48	12.50	3.045	0.244	2.10	6.70				0.452		
20	129	64/ 6/14 19:30 64/ 6/14 21: 0	1.50	0.600	0.400	1.90	0.83	64/ 6/14 19:45 64/ 6/14 22:30	2.75	0.082	0.137	200.00	
	128	64/ 6/14 19:30 64/ 6/14 20:48	1.30	0.300	0.231	0.80	0.83				0.273		
	127	64/ 6/14 19:48 64/ 6/14 20:54	1.10	0.310	0.282	1.00	0.53				0.265		
	126	64/ 6/14 19:36 64/ 6/14 21: 0	1.40	0.440	0.314	1.30	0.73				0.186		
21	129	65/ 5/25 10:24 65/ 5/25 11:48	1.40	1.040	0.743	1.90	1.35	65/ 5/25 10:50 65/ 5/25 15:30	4.67	0.245	0.236	378.00	
22	129	65/ 7/ 2 3:36 65/ 7/ 2 4:48	1.20	1.910	1.593	2.60	0.98	65/ 7/ 2 3:40 65/ 7/ 2 9:30	5.84	0.504	0.264	579.00	
23	129	65/ 8/25 21: 0 65/ 8/26 0:18	3.30	2.105	0.638	4.00	0.66	65/ 8/25 21: 0 65/ 8/26 2:18	5.30	0.317	0.150	605.00	
	128	65/ 8/25 20:54 65/ 8/26 0:24	3.50	1.458	0.417	5.60	0.77				0.217		
	127	65/ 8/25 21: 0 65/ 8/26 0:36	3.60	1.661	0.462	3.60	0.66				0.191		

*** TABLE X - 68. ***

```
***********************************
* SUMMARY OF EVENTS(CONTINUED) *
***********************************
*       CATCHMENT FILE : 43     *
*****************************************************
* CHAMPAIGN, ILLINOIS.  BONEYARD CREEK.         (IL 2 1) *
*****************************************************
*    STORM SEWERED AREA        CATCHMENT AREA 2290.00 ACRES *
*****************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
23	126	65/ 8/25 20:48 65/ 8/26 0:12	3.40	2.005	0.589	4.40	0.87	65/ 8/25 21: 0 65/ 8/26 2:18	5.30	0.317	0.158	605.00	
	125	65/ 8/25 21: 0 65/ 8/26 0:30	3.50	2.536	0.724	6.00	0.66				0.125		
24	129	65/ 9/14 20:42 65/ 9/14 22:30	1.80	0.741	0.411	1.40	0.80	65/ 9/14 20:35 65/ 9/14 23:50	3.25	0.189	0.255	269.00	
	128	65/ 9/14 20:30 65/ 9/14 22:18	1.80	0.711	0.396	2.00	1.00				0.266		
	127	65/ 9/14 20:42 65/ 9/14 22:30	1.80	0.738	0.410	2.10	0.80				0.256		
	126	65/ 9/14 20:24 65/ 9/14 22:30	2.10	0.830	0.395	2.30	1.10				0.228		
	125	65/ 9/14 20:36 65/ 9/14 22:18	1.70	0.816	0.480	3.00	0.90				0.231		
25	129	66/ 4/20 16:48 66/ 4/20 20:30	3.70	1.150	0.311	1.30	0.75	66/ 4/20 16:48 66/ 4/20 21:48	5.00	0.278	0.241	308.00	
26	129	66/ 6/27 15:42 66/ 6/27 18: 6	2.40	0.900	0.375	1.60	2.05	66/ 6/27 15:50 66/ 6/27 19:45	3.92	0.156	0.173	231.00	
	128	66/ 6/27 15:42 66/ 6/27 17:36	1.90	0.455	0.240	2.20	2.05				0.343		
	127	66/ 6/27 15:36 66/ 6/27 17:54	2.30	0.484	0.210	1.20	2.15				0.322		
	126	66/ 6/27 15:30 66/ 6/27 18: 6	2.60	0.998	0.384	2.40	2.25				0.156		
	125	66/ 6/27 15:36 66/ 6/27 17:54	2.30	1.370	0.595	2.10	2.15				0.114		
27	129	66/ 8/18 21:48 66/ 8/18 23:42	1.90	1.187	0.624	1.90	0.87	66/ 8/18 21:35 66/ 8/19 2:10	4.58	0.284	0.239	418.00	
	128	66/ 8/18 21: 0 66/ 8/18 23:42	2.70	1.018	0.377	1.20	1.66				0.279		
	127	66/ 8/18 21:30 66/ 8/18 23:42	2.20	1.656	0.753	2.40	1.16				0.171		
	126	66/ 8/18 21:42 66/ 8/18 23:42	2.00	1.462	0.731	2.00	0.96				0.194		
	125	66/ 8/18 21:42 66/ 8/19 1:45	4.05	1.570	0.388	2.00	0.96				0.181		

*** TABLE X - 68. ***

```
                                   ***********************************
                                   *        SUMMARY OF EVENTS        *
                                   ***********************************
                                   *        CATCHMENT FILE : 44      *
                         ****************************************************************
                         * WEST LAFAYETTE, INDIANA.    ROSS-ADE(UPPER).          (IN 1 1) *
                         ****************************************************************
                         *    STORM SEWERED AREA          CATCHMENT AREA    29.00 ACRES *
                         ****************************************************************


                                   RAINFALL                                            FLOW
                                   --------                                            ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME   AVG   PEAK    BASIN DATE(START-END)     DURATION    VOLUME    RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN      (HRS)      (INCH)    COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR   HRS                                                      CFS
-----  ----  ---------------     --------  ------  -----  ----    ----- ---------------     --------    ------    ------   ----  ----


  1    129    67/ 8/ 2 17:14       0.40    0.370  0.920  1.50     0.32  67/ 8/ 2 17:18        1.59      0.076     0.205    9.85
              67/ 8/ 2 17:38                                            67/ 8/ 2 18:53

  2    129    67/ 8/26 17:35       0.23    0.138  0.590  0.90     0.13  67/ 8/26 17:37        1.34      0.051     0.370    6.56
              67/ 8/26 17:49                                            67/ 8/26 18:57

  3    129    74/ 6/21  3:57       4.50    0.615  0.137  0.32     3.50  74/ 6/21  4:27        4.00      0.080     0.129    1.18
              74/ 6/21  8:27                                            74/ 6/21  8:27

  4    129    74/ 7/19  3:44       5.50    0.655  0.119  0.66     0.00  74/ 7/19  3:44        5.50      0.052     0.080    1.93
              74/ 7/19  9:14                                            74/ 7/19  9:14

  5    129    74/ 8/ 1 22:25       2.50    0.045  0.018  0.08     2.00  74/ 8/ 1 22:55        2.50      0.004     0.088    0.11
              74/ 8/ 2  0:55                                            74/ 8/ 2  1:25

  6    129    74/ 8/27 14:52       4.50    1.135  0.252  1.42     0.00  74/ 8/27 14:52        5.00      0.166     0.146    6.28
              74/ 8/27 19:22                                            74/ 8/27 19:52

  7    129    74/ 9/11 16:35       8.00    0.830  0.104  1.29     5.50  74/ 9/11 17: 5        8.00      0.194     0.233    6.20
              74/ 9/12  0:35                                            74/ 9/12  1: 5

  8    129    74/10/23 17:22       5.50    0.300  0.055  0.26     2.50  74/10/23 17:52        8.00      0.046     0.152    1.01
              74/10/23 22:52                                            74/10/24  1:52

  9    129    74/11/ 3  6:28       7.00    0.585  0.084  0.51     6.00  74/11/ 3  7:58        6.00      0.120     0.205    2.82
              74/11/ 3 13:28                                            74/11/ 3 13:58

 10    129    74/11/19 22:59       1.00    0.045  0.045  0.07     0.00  74/11/19 22:59        2.00      0.007     0.165    0.36
              74/11/19 23:59                                            74/11/20  0:59
```

*** TABLE X - 69. ***

```
                                             ******************************
                                             *     STATISTICAL SUMMARY    *
                                             ******************************
                                             *     CATCHMENT FILE : 44    *
                              **********************************************************
                              * WEST LAFAYETTE, INDIANA.   ROSS-ADE(UPPER).     (IN 1 1) *
                              **********************************************************
                              *   STORM SEWERED AREA         CATCHMENT AREA   29.00 ACRES *
                              **********************************************************

                                   310         530
                                   BOD       RESIDUE
                                  5 DAY      TOT NFLT
                                  MG/L        MG/L
                                ---------   --------
MEAN..........................    59.600     105.000
STANDARD DEVIATION............    89.700      52.000
COEF. OF VARIATION............     1.506       0.497
PARAMETER RANGE
         MIN..................     2.000       3.000
         MAX..................   433.000     254.000
# OF EVENTS...................         8           8
TOTAL FLOW VOLUME(INCH).......     0.665       0.665
TOTAL MASS LOAD(LBS)..........   260.000     458.000
CONCENTRATION(LBS/AC-IN)......    13.500      23.700
```

*** TABLE X - 70. ***

```
                             ********************************
                             *      SUMMARY OF EVENTS       *
                             ********************************
                             *      CATCHMENT FILE : 45     *
                  ***********************************************************
                  * WICHITA, KANSAS.   DRY CREEK.                  (KS 1 1) *
                  ***********************************************************
                  *   STORM SEWERED AREA        CATCHMENT AREA 1883.00 ACRES *
                  ***********************************************************


                          RAINFALL                                         FLOW
                          --------                                         ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                                CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------   -------    ------   ------   ----  ----


  1    129    64/ 5/ 5 23:15      2.75    0.720  0.262  1.44    1.25  64/ 5/ 5 23:30     3.25      0.184    0.256  250.00
              64/ 5/ 6  2: 0                                          64/ 5/ 6  2:45

  2    129    64/ 8/ 9 23: 0      6.25    2.200  0.352  1.60    4.75  64/ 8/ 9 23: 0     8.00      0.476    0.216  365.00
              64/ 8/10  5:15                                          64/ 8/10  7: 0

  3    129    64/ 8/27 19: 0      2.50    1.880  0.752  2.56    1.00  64/ 8/27 19: 0     5.00      0.475    0.253  580.00
              64/ 8/27 21:30                                          64/ 8/27 24: 0

  4    129    64/ 9/19 20:45      1.25    0.560  0.448  1.20    1.25  64/ 9/19 20:45     3.50      0.157    0.280  226.00
              64/ 9/19 22: 0                                          64/ 9/20  0:15

  5    129    65/ 2/28 17:15      4.00    0.600  0.150  0.88    1.75  65/ 2/28 17:45     5.25      0.212    0.354  212.00
              65/ 2/28 21:15                                          65/ 2/28 23: 0

  6    129    65/ 5/13 10:30     14.50    2.380  0.164  2.80   12.00  65/ 5/13 18: 0    12.00      0.622    0.261  608.00
              65/ 5/14  1: 0                                          65/ 5/14  6: 0

  7    129    65/ 5/24 15:15      1.25    0.740  0.592  1.68    0.75  65/ 5/24 15:15     3.00      0.103    0.139  148.00
              65/ 5/24 16:30                                          65/ 5/24 18:15

  8    129    65/ 7/ 9 11:30      3.50    1.680  0.480  1.84    0.75  65/ 7/ 9 11: 0    10.25      0.611    0.364  505.00
              65/ 7/ 9 15: 0                                          65/ 7/ 9 21:15
```

*** TABLE X - 71. ***

```
*******************************************
*          SUMMARY OF EVENTS              *
*******************************************
*         CATCHMENT FILE : 46             *
*****************************************************************
* BALTIMORE, MARYLAND.  GRAY HAVEN.                   (MD 1 1) *
*****************************************************************
*   STORM SEWERED AREA          CATCHMENT AREA    23.30 ACRES *
*****************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	63/ 6/ 4 24: 0 63/ 6/ 5 0:46	0.77	2.190	2.856	6.60	0.68	63/ 6/ 4 24: 0 63/ 6/ 5 1:12	1.20	1.506	0.688	80.75	
2	129	63/ 6/ 9 24: 0 63/ 6/10 0:52	0.87	1.998	2.306	5.16	0.68	63/ 6/10 0: 4 63/ 6/10 1:22	1.30	1.472	0.737	78.99	
3	129	63/ 6/13 24: 0 63/ 6/14 0:58	0.97	1.420	1.469	3.60	0.37	63/ 6/14 0: 1 63/ 6/14 1:12	1.18	0.606	0.427	30.85	
4	129	63/ 6/19 24: 0 63/ 6/20 1:11	1.18	1.454	1.232	3.84	0.38	63/ 6/20 0: 8 63/ 6/20 1:36	1.46	0.590	0.406	29.58	
5	129	63/ 6/28 24: 0 63/ 6/29 2:54	2.90	1.184	0.408	4.20	0.48	63/ 6/29 0: 9 63/ 6/29 3:11	3.03	0.526	0.444	27.25	
6	129	63/ 7/31 24: 0 63/ 8/ 1 0:29	0.48	1.661	3.457	6.60	0.20	63/ 7/31 24: 0 63/ 8/ 1 1: 0	1.00	0.991	0.597	88.08	
7	129	63/ 8/12 24: 0 63/ 8/13 0:58	0.96	0.637	0.661	3.84	0.71	63/ 8/12 24: 0 63/ 8/13 1:29	1.48	0.192	0.302	11.18	
8	129	63/ 8/13 24: 0 63/ 8/14 2:21	2.35	2.181	0.929	6.00	0.27	63/ 8/14 0: 7 63/ 8/14 2:22	2.25	1.046	0.480	34.70	
9	129	63/ 8/18 24: 0 63/ 8/19 2:46	2.77	2.324	0.840	6.00	0.27	63/ 8/19 0: 6 63/ 8/19 3:17	3.18	1.101	0.474	34.93	
10	129	64/ 6/21 24: 0 64/ 6/22 1: 4	1.07	0.445	0.417	2.40	0.77	64/ 6/22 0:13 64/ 6/22 1:36	1.38	0.119	0.267	9.08	
11	129	64/ 7/ 7 24: 0 64/ 7/ 8 2:20	2.33	1.301	0.558	2.94	3.40	64/ 7/ 8 0: 9 64/ 7/ 8 2:51	2.70	0.615	0.473	16.77	
12	129	64/ 7/12 24: 0 64/ 7/13 0:26	0.43	0.235	0.548	1.08	0.46	64/ 7/13 0:11 64/ 7/13 0:57	0.77	0.067	0.284	4.19	
13	129	64/ 8/17 24: 0 64/ 8/18 0:39	0.65	0.301	0.464	3.00	0.27	64/ 8/18 0: 8 64/ 8/18 1:11	1.05	0.201	0.668	19.57	
14	129	64/ 9/28 24: 0 64/ 9/29 0:11	0.18	0.206	1.148	1.68	0.21	64/ 9/28 24: 0 64/ 9/29 0:41	0.68	0.074	0.357	6.52	
15	129	65/ 7/15 24: 0 65/ 7/16 0:31	0.52	0.284	0.550	2.40	0.18	65/ 7/15 24: 0 65/ 7/16 0:36	0.60	0.048	0.168	5.31	
16	129	65/ 7/22 24: 0 65/ 7/23 0: 6	0.10	0.068	0.696	1.20	0.23	65/ 7/22 24: 0 65/ 7/23 0:32	0.53	0.016	0.238	1.47	
17	129	65/ 7/28 24: 0 65/ 7/29 0:30	0.50	0.298	0.595	1.80	0.53	65/ 7/28 24: 0 65/ 7/29 0:59	0.98	0.072	0.243	6.57	
18	129	65/ 8/ 1 24: 0 65/ 8/ 2 0:59	0.98	0.975	0.994	4.20	0.58	65/ 8/ 2 0: 9 65/ 8/ 2 1: 1	0.87	0.369	0.378	30.25	

*** TABLE X - 72. ***

```
                                                  ********************************
                                                  * SUMMARY OF EVENTS(CONTINUED) *
                                                  ********************************
                                                  *       CATCHMENT FILE : 46    *
                                   **************************************************************
                                   * BALTIMORE, MARYLAND.  GRAY HAVEN.                 (MD 1 1) *
                                   **************************************************************
                                   *    STORM SEWERED AREA         CATCHMENT AREA   23.30 ACRES *
                                   **************************************************************


                                     RAINFALL                                                FLOW
                                     --------                                                ----

EVENT  RAIN  DATE(START-END)   DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)   (INCH)   RAIN  RAIN   LAG   YR,MON,D,HR,MIN     (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                 IN/HR IN/HR  HRS                                                     CFS
----   ----  --------------    --------  ------   ----  ----  ----- ---------------    --------   ------   ------   ----  ----


  19   129    65/ 8/11 24: 0   0.28    0.438 1.558  3.00    0.40 65/ 8/11 24: 0     0.68      0.052    0.118     3.52
              65/ 8/12  0:17                                     65/ 8/12  0:41

  20   129    65/ 8/19 24: 0   0.20    0.408 2.047  2.40    0.48 65/ 8/19 24: 0     0.66      0.099    0.242     4.28
              65/ 8/20  0:12                                     65/ 8/20  0:40

  21   129    65/ 8/26 24: 0   0.75    0.315 0.420  1.80    0.46 65/ 8/27  0:14     0.57      0.038    0.119     3.00
              65/ 8/27  0:45                                     65/ 8/27  0:48

  22   129    65/ 9/ 2 24: 0   0.52    0.462 0.895  1.80    0.55 65/ 9/ 3  0: 8     0.87      0.121    0.261     7.73
              65/ 9/ 3  0:31                                     65/ 9/ 3  1: 0

  23   129    66/ 8/11 24: 0   0.75    0.712 0.950  1.80    0.40 66/ 8/11 24: 0     0.77      0.475    0.666    19.28
              66/ 8/12  0:45                                     66/ 8/12  0:46

  24   129    66/10/21  0: 1   0.66    0.281 0.424  1.80    0.41 66/10/20 24: 0     0.82      0.156    0.556    15.16
              66/10/21  0:41                                     66/10/21  0:49
```

*** TABLE X - 72. ***

```
          ******************************
          *     SUMMARY OF EVENTS      *
          ******************************
          *     CATCHMENT FILE : 47    *
****************************************************
* BALTIMORE, MARYLAND.  NORTHWOOD.        (MD 1 2) *
****************************************************
*    STORM SEWERED AREA      CATCHMENT AREA  47.40 ACRES *
****************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	64/ 3/26 13:56 64/ 3/26 14:12	0.27	0.022	0.083	0.39	0.10	64/ 3/26 13:59 64/ 3/26 14:14	0.25	0.062	2.778	36.02	
2	129	64/11/25 19:13 64/11/25 20: 1	0.80	0.047	0.059	0.15	0.13	64/11/25 19:13 64/11/25 20: 7	0.90	0.191	4.021	42.19	
3	129	64/12/26 23:31 64/12/27 0:21	0.83	0.052	0.063	0.32	0.58	64/12/26 23:44 64/12/27 0:21	0.62	0.181	3.476	48.82	
4	129	65/ 7/ 5 13:33 65/ 7/ 5 13:45	0.20	0.072	0.353	0.54	0.50	65/ 7/ 5 13:38 65/ 7/ 5 14:17	0.65	0.409	5.707	107.12	
5	129	65/ 7/15 20:54 65/ 7/15 21:16	0.37	0.034	0.094	0.26	0.18	65/ 7/15 20:55 65/ 7/15 21:16	0.35	0.144	4.176	47.40	
6	129	65/ 7/28 14:36 65/ 7/28 14:56	0.33	0.042	0.126	0.35	0.32	65/ 7/28 14:42 65/ 7/28 15: 2	0.33	0.076	1.812	22.28	
7	129	65/ 8/ 1 9:22 65/ 8/ 1 22:15	12.89	0.254	0.020	0.55	12.55	65/ 8/ 1 9:25 65/ 8/ 1 22:21	12.93	0.553	2.175	59.25	
8	129	65/ 8/ 4 16:40 65/ 8/ 4 23:38	6.97	0.277	0.040	0.59	5.80	65/ 8/ 4 16:53 65/ 8/ 4 23:38	6.75	1.093	3.943	106.18	
9	129	65/ 8/ 8 21:54 65/ 8/ 8 22:12	0.30	0.031	0.102	0.31	0.12	65/ 8/ 8 21:57 65/ 8/ 8 22:15	0.30	0.068	2.208	33.18	
10	129	65/ 8/19 15:31 65/ 8/19 15:54	0.38	0.025	0.066	0.23	0.13	65/ 8/19 15:32 65/ 8/19 15:54	0.37	0.093	3.692	32.71	
11	129	65/ 9/ 1 19:24 65/ 9/ 1 19:40	0.27	0.024	0.089	0.32	0.08	65/ 9/ 1 19:27 65/ 9/ 1 19:43	0.27	0.086	3.618	44.56	
12	129	65/ 9/24 16:20 65/ 9/24 16:29	0.15	0.034	0.228	0.41	0.10	65/ 9/24 16:22 65/ 9/24 16:36	0.23	0.074	2.187	49.77	

*** TABLE X - 73. ***

```
                                                      *******************************
                                                      *     SUMMARY OF EVENTS       *
                                                      *******************************
                                                      *     CATCHMENT FILE : 48     *
                                              *************************************************************
                                              * GREENFIELD, MASSACHUSETTS. MAPLE BROOK.          (MA 1 1) *
                                              *************************************************************
                                              *   STORM SEWERED AREA      CATCHMENT AREA 1014.00 ACRES *
                                              *************************************************************


                                                  RAINFALL                                            FLOW
                                                  --------                                            ----

 EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF  PEAK  DRY
        GAGE  YR,MON,D,HR,MIN       (HRS)   (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN     (HRS)     (INCH)   COEFF.  FLOW  DAYS
                                                    IN/HR IN/HR  HRS                                                  CFS
 ----   ---   ---------------    --------  ------  ----  ----   ----- ---------------   --------   ------   ------  ----  ----

    1   129     76/ 6/ 1 18:40      6.50   0.220  0.034  0.24   6.83  76/ 6/ 1 18:40      9.17      0.021    0.096  11.54 14.00
                76/ 6/ 2  1:10                                        76/ 6/ 2  3:50

    2   129     76/ 7/11 20:50      4.17   0.431  0.103  0.96   3.58  76/ 7/11 21:20      5.58      0.059    0.136  99.17 12.00
                76/ 7/12  1: 0                                        76/ 7/12  2:55

    3   129     76/ 9/17  8:15      4.41   0.360  0.081  0.36   1.91  76/ 9/17  9: 0      4.00      0.055    0.152  45.19 19.00
                76/ 9/17 12:40                                        76/ 9/17 13: 0

    4   129     77/ 4/ 4 23: 0     15.00   1.020  0.068  0.20   5.00  77/ 4/ 4 23:30     14.50      0.185    0.181  29.45  2.00
                77/ 4/ 5 14: 0                                        77/ 4/ 5 14: 0

    5   129     77/ 4/23  5:30      5.00   0.260  0.052  0.16   3.25  77/ 4/23  6:15      4.25      0.014    0.054   9.21 20.00
                77/ 4/23 10:30                                        77/ 4/23 10:30
```

*** TABLE X - 74. ***

```
                                          ********************************
                                          *     STATISTICAL SUMMARY      *
                                          ********************************
                                          *       CATCHMENT FILE : 48    *
                              **********************************************************
                              * GREENFIELD, MASSACHUSETTS. MAPLE BROOK.         (MA 1 1) *
                              **********************************************************
                              *    STORM SEWERED AREA        CATCHMENT AREA 1014.00 ACRES *
                              **********************************************************

                                     310        340        400        530        535        660        665        680
                                     BOD        COD        PH       RESIDUE    RESIDUE   ORTHOPO4    PHOS-P    T ORG C
                                    5 DAY    HI LEVEL               TOT NFLT   VOL NFLT     PO4       P-WET        C
                                    MG/L       MG/L        SU         MG/L       MG/L       MG/L       MG/L       MG/L
                                  --------   --------   --------   --------   --------   --------   --------   --------
MEAN.............................   11.600     58.100      6.970    147.000     18.700      0.179      1.480     22.400
STANDARD DEVIATION...............    7.170     16.800      0.013    112.000     10.600      0.000      0.404      3.600
COEF. OF VARIATION...............    0.617      0.289      0.002      0.761      0.570      0.002      0.273      0.161
PARAMETER RANGE
           MIN...................    4.000     23.700      6.450      8.500      9.000      0.034      0.220     15.800
           MAX...................   37.000    149.000      7.700    540.000     77.000      0.287      3.040     41.200
# OF EVENTS......................        4          2          2          5          2          1          3          2
TOTAL FLOW VOLUME(INCH)..........    0.209      0.139      0.142      0.264      0.147      0.134      0.116      0.139
TOTAL MASS LOAD(LBS).............  557.000   1860.000 **********   8940.000    629.000      5.500     39.300    717.000
CONCENTRATION(LBS/AC-IN).........    2.630     13.200 **********     33.400      4.230      0.041      0.335      5.080

                                     940       1051       1092
                                  CHLORIDE     LEAD        ZINC
                                     CL       PB.TOT     ZN.TOT
                                    MG/L       UG/L       UG/L
                                  --------   --------   --------
MEAN.............................   25.000    178.000    196.000
STANDARD DEVIATION...............    6.520    200.000     32.700
COEF. OF VARIATION...............    0.261      1.124      0.167
PARAMETER RANGE
           MIN...................   15.600      8.900     52.000
           MAX...................   63.500    799.000    574.000
# OF EVENTS......................        3          4          5
TOTAL FLOW VOLUME(INCH)..........    0.150      0.239      0.257
TOTAL MASS LOAD(LBS).............  863.000      9.790     11.500
CONCENTRATION(LBS/AC-IN).........    5.660      0.040      0.044
```

*** TABLE X - 75. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 49

NORTHAMPTON, MASSACHUSETTS. MARKET STREET SEWER. (MA 2 1)

STORM SEWERED AREA CATCHMENT AREA 380.00 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	77/ 6/ 6 18: 0 77/ 6/ 6 21:50	3.83	0.170	0.044	0.24	1.92	77/ 6/ 6 18: 0 77/ 6/ 6 22:20	4.33	0.038	0.222	13.31	
2	129	77/ 6/21 19:20 77/ 6/21 19:55	0.58	0.050	0.085	0.12	0.92	77/ 6/21 19:15 77/ 6/21 20:25	1.16	0.007	0.135	4.20	
3	129	77/ 6/29 12:45 77/ 6/29 13:45	1.00	0.259	0.259	0.72	1.08	77/ 6/29 12:45 77/ 6/29 14:30	1.75	0.056	0.214	41.20	
4	129	77/ 7/12 0:35 77/ 7/12 3:55	3.33	0.652	0.196	0.84	2.33	77/ 7/12 0:15 77/ 7/12 6:30	6.25	0.126	0.193	37.44	
5	129	77/ 7/12 10:40 77/ 7/12 13:50	3.17	0.848	0.268	1.68	2.92	77/ 7/12 10:40 77/ 7/12 16: 0	5.34	0.193	0.227	75.40	
6	129	77/ 7/21 16:35 77/ 7/21 17: 0	0.42	0.173	0.414	1.32	0.50	77/ 7/21 16:35 77/ 7/21 17:25	0.83	0.018	0.104	19.58	

*** TABLE X - 76. ***

```
                                            ******************************
                                            *     STATISTICAL SUMMARY    *
                                            ******************************
                                            *     CATCHMENT FILE : 49    *
                                  ***************************************************
                                  * NORTHHAMPTON, MASSACHUSETTS. MARKET STREET SEWER. (MA 2 1) *
                                  ***************************************************
                                  *    STORM SEWERED AREA        CATCHMENT AREA  380.00 ACRES *
                                  ***************************************************

                                      310         340         400         530         535         660         665         680
                                      BOD         COD         PH        RESIDUE     RESIDUE    ORTHOPO4     PHOS-P     T ORG C
                                     5 DAY      HI LEVEL                TOT NFLT    VOL NFLT      PO4        P-WET        C
                                     MG/L        MG/L         SU          MG/L        MG/L        MG/L        MG/L        MG/L
                                   --------    --------    --------    --------    --------    --------    --------    --------
MEAN.............................    25.200      91.100       6.420     158.000      43.900       0.264       0.525      29.600
STANDARD DEVIATION...............    16.500      70.700       0.190      59.200      11.500       0.094       0.180      13.200
COEF. OF VARIATION...............     0.655       0.776       0.030       0.374       0.261       0.357       0.343       0.445
PARAMETER RANGE
              MIN................     3.700       7.800       3.000       6.000       5.500       0.130       0.190       3.360
              MAX................   102.000     756.000       7.100     298.000     112.000       1.090       2.570      99.100
# OF EVENTS......................         2           6           3           5           5           6           6           6
TOTAL FLOW VOLUME(INCH)..........     0.138       0.407       0.169       0.294       0.294       0.402       0.404       0.407
TOTAL MASS LOAD(LBS).............   300.000    3190.000  **********    4010.000    1110.000       9.130      18.300    1040.000
CONCENTRATION(LBS/AC-IN).........     5.710      20.600  **********      35.800       9.940       0.060       0.119       6.710

                                      940        1051        1092
                                   CHLORIDE      LEAD        ZINC
                                      CL        PB.TOT      ZN.TOT
                                     MG/L        UG/L        UG/L
                                   --------    --------    --------
MEAN.............................     8.110      83.100      96.200
STANDARD DEVIATION...............     8.000     134.000      87.400
COEF. OF VARIATION...............     0.986       1.613       0.909
PARAMETER RANGE
              MIN................     0.490       1.000       9.900
              MAX................    74.200     515.000     389.000
# OF EVENTS......................         6           6           6
TOTAL FLOW VOLUME(INCH)..........     0.401       0.406       0.407
TOTAL MASS LOAD(LBS).............   280.000       2.900       3.370
CONCENTRATION(LBS/AC-IN).........     1.840       0.019       0.022
```

*** TABLE X - 77. ***

```
                                         *************************
                                         *   SUMMARY OF EVENTS   *
                                         *************************
                                         *  CATCHMENT FILE : 50  *
                              *************************************************
                              * JACKSON, MISSISSIPPI.  CRANE CREEK.   (MS 1 1) *
                              *************************************************
                              *  STORM SEWERED AREA   CATCHMENT AREA 285.00 ACRES *
                              *************************************************


                              RAINFALL                                                          FLOW
                              --------                                                          ----

EVENT RAIN  DATE(START-END)    DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK   DRY
      GAGE  YR,MON,D,HR,MIN     (HRS)   (INCH) RAIN  RAIN  LAG   YR,MON,D,HR,MIN     (HRS)    (INCH)  COEFF.  FLOW   DAYS
                                               IN/HR IN/HR HRS                                               CFS
----- ----  ---------------    -------- ------ ----  ----  ----- ---------------   --------  ------  ------  ----   ----


  1   129   65/ 5/15 15:25       2.50   0.380 0.152  2.16   0.42  65/ 5/15 15:25     2.58     0.111   0.292   39.00
            65/ 5/15 17:55                                        65/ 5/15 18: 0

  2   129   65/ 6/24  5:15       2.83   1.439 0.508  3.48   1.25  65/ 6/24  5:45     3.25     0.317   0.221  106.00
            65/ 6/24  8: 5                                        65/ 6/24  9: 0

  3   129   65/ 6/25 13:30       4.66   0.772 0.165  1.20   2.08  65/ 6/25 14:30     3.50     0.229   0.296   65.00
            65/ 6/25 18:10                                        65/ 6/25 18: 0

  4   129   65/ 7/24 15:40       5.34   2.000 0.375  3.84   0.59  65/ 7/24 15:50     4.17     0.491   0.246  161.00
            65/ 7/24 21: 0                                        65/ 7/24 20: 0

  5   129   65/ 8/12 16: 5       1.75   1.807 1.033  5.40   0.50  65/ 8/12 16: 5     2.92     0.518   0.287  149.00
            65/ 8/12 17:50                                        65/ 8/12 19: 0

  6   129   65/ 8/20 16: 0       4.41   0.644 0.146  2.04   3.41  65/ 8/20 19: 0     3.00     0.119   0.184   29.80
            65/ 8/20 20:25                                        65/ 8/20 22: 0

  7   129   65/ 9/10 14:25       7.75   1.706 0.220  2.28   6.50  65/ 9/10 16: 0     8.00     0.374   0.219   78.00
            65/ 9/10 22:10                                        65/ 9/10 24: 0

  8   129   65/ 9/11 21:40       1.75   1.890 1.080  7.32   0.42  65/ 9/11 21:40     4.34     0.599   0.317  253.00
            65/ 9/11 23:25                                        65/ 9/12  2: 0

  9   129   65/ 9/22 16:45       4.00   0.582 0.146  2.16   0.33  65/ 9/22 16:45     5.25     0.099   0.169   20.20
            65/ 9/22 20:45                                        65/ 9/22 22: 0

 10   129   65/10/ 5 24: 0       6.66   1.142 0.171  2.88   5.41  65/10/ 6  1: 0     8.00     0.264   0.231   70.00
            65/10/ 6  6:40                                        65/10/ 6  9: 0

 11   129   66/ 1/ 4 14:10      11.42   1.790 0.157  0.84   8.75  66/ 1/ 4 14:35    12.42     0.683   0.381   60.00
            66/ 1/ 5  1:35                                        66/ 1/ 5  3: 0

 12   129   66/ 2/ 1  3:40       2.42   0.450 0.186  1.20   2.50  66/ 2/ 1  5:10     3.83     0.138   0.308   23.40
            66/ 2/ 1  6: 5                                        66/ 2/ 1  9: 0

 13   129   66/ 2/26 19:40       4.75   0.650 0.137  0.36   3.58  66/ 2/26 21: 0     7.00     0.243   0.373   21.80
            66/ 2/27  0:25                                        66/ 2/27  4: 0

 14   129   66/ 3/ 3 16:25       1.33   0.570 0.427  3.84   0.58  66/ 3/ 3 16:40     3.33     0.344   0.604  137.00
            66/ 3/ 3 17:45                                        66/ 3/ 3 20: 0

 15   129   66/ 4/20 21:45      11.08   3.220 0.291  3.84   1.00  66/ 4/20 21:50    11.17     1.105   0.343  154.00
            66/ 4/21  8:50                                        66/ 4/21  9: 0

 16   129   66/ 4/26  3:15       4.58   1.090 0.238  1.44   2.67  66/ 4/26  4: 5     4.92     0.505   0.463  116.00
            66/ 4/26  7:50                                        66/ 4/26  9: 0

 17   129   66/ 5/23 23:15       2.33   1.160 0.497  4.68   1.25  66/ 5/23 23: 0     4.00     0.649   0.559  248.00
            66/ 5/24  1:35                                        66/ 5/24  3: 0



                                         *** TABLE X - 78. ***
```

* SUMMARY OF EVENTS *

* CATCHMENT FILE : 51 *

* LINCOLN, NEBRASKA. 39TH AND HOLDREGE. (NB 1 1) *

* STORM SEWERED AREA CATCHMENT AREA 79.00 ACRES *

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	72/ 4/15 16:15 72/ 4/16 0:45	8.50	0.600	0.071	0.40	1.08	72/ 4/15 16:30 72/ 4/15 18:40	2.17	0.067	0.112	3.99	5.00
2	123	72/ 4/27 12: 0 72/ 4/27 21: 0	9.00	1.460	0.162	0.75	2.75	72/ 4/27 14:10 72/ 4/28 8: 0	17.83	0.338	0.232	5.80	5.00
3	123	72/ 5/23 11:45 72/ 5/23 15:15	3.50	0.850	0.243	0.80	1.08	72/ 5/23 12:30 72/ 5/23 14: 0	1.50	0.129	0.151	18.34	10.00
4	123	72/ 6/ 4 6: 0 72/ 6/ 4 7: 0	1.00	0.500	0.500	0.50	0.50	72/ 6/ 4 6:20 72/ 6/ 4 7: 5	0.75	0.036	0.072	12.52	5.00
5	123	72/ 6/13 17:45 72/ 6/13 21:45	4.00	0.570	0.142	0.80	0.50	72/ 6/13 17:50 72/ 6/13 19: 5	1.25	0.094	0.165	13.83	2.00
6	123	72/ 6/16 5: 0 72/ 6/16 7:15	2.25	0.150	0.067	0.20	0.67	72/ 6/16 5:25 72/ 6/16 6:35	1.17	0.054	0.362	10.82	1.00
7	123	72/ 7/ 4 9: 0 72/ 7/ 4 10: 0	1.00	0.100	0.100	0.10	0.90	72/ 7/ 4 6: 3 72/ 7/ 4 9:54	3.85	0.002	0.023	0.10	15.00
8	123	72/ 7/11 0:30 72/ 7/11 2: 0	1.50	0.150	0.100	0.10	1.75	72/ 7/11 1:50 72/ 7/11 3:30	1.67	0.014	0.095	1.21	2.00
9	123	72/ 7/25 23:30 72/ 7/26 4:30	5.00	0.900	0.180	0.18	3.05	72/ 7/25 23:30 72/ 7/26 3:50	4.33	0.292	0.324	27.08	7.00
10	123	72/ 7/31 12: 0 72/ 7/31 14:30	2.50	0.350	0.140	0.14	0.41	72/ 7/31 12: 0 72/ 7/31 13: 0	1.00	0.025	0.072	3.74	4.00
11	123	72/ 8/ 8 1: 0 72/ 8/ 8 1:20	0.33	0.650	1.958	1.96	0.48	72/ 8/ 8 1:15 72/ 8/ 8 2: 5	0.83	0.192	0.295	31.10	4.00
12	123	73/ 3/10 1: 0 73/ 3/10 10:30	9.50	1.300	0.137	0.37	9.50	73/ 3/10 1:30 73/ 3/10 11:15	9.75	0.965	0.743	16.09	
13	123	73/ 3/22 23:30 73/ 3/23 19:30	20.00	1.650	0.082	0.28	7.50	73/ 3/22 23:45 73/ 3/23 7: 0	7.25	0.681	0.413	9.98	
14	123	73/ 4/19 7:45 73/ 4/19 9: 0	1.25	0.250	0.200	0.40	0.75	73/ 4/19 8: 0 73/ 4/19 14:30	6.50	0.086	0.345	9.98	
15	123	73/ 5/21 5:15 73/ 5/21 6:15	1.00	0.180	0.180	0.32	0.75	73/ 5/21 5:15 73/ 5/21 6:30	1.25	0.079	0.440	16.09	
16	123	73/ 6/ 2 10: 0 73/ 6/ 2 12:30	2.50	0.300	0.120	0.30	2.50	73/ 6/ 2 10:30 73/ 6/ 2 13: 0	2.50	0.194	0.646	12.38	
17	123	73/ 6/ 4 8: 0 73/ 6/ 4 9: 0	1.00	0.150	0.150	0.20	0.75	73/ 6/ 4 7:55 73/ 6/ 4 10: 0	2.08	0.105	0.702	5.80	
18	123	73/ 7/ 3 22:30 73/ 7/ 3 24: 0	1.50	0.760	0.507	1.40	0.58	73/ 7/ 3 22:45 73/ 7/ 4 0:45	2.00	0.516	0.679	59.57	

*** TABLE X - 79. ***

```
                                                  ************************************
                                                  *      STATISTICAL SUMMARY         *
                                                  ************************************
                                                  *      CATCHMENT FILE : 51         *
                                       *****************************************************
                                       * LINCOLN, NEBRASKA.   39TH AND HOLDREGE.      (NB 1 1) *
                                       *****************************************************
                                       *   STORM SEWERED AREA       CATCHMENT AREA   79.00 ACRES *
                                       *****************************************************

                                          70          95         310         340         480         500         505         530
                                         TURB     CNDUCTVY       BOD         COD      SALINITY     RESIDUE     RESIDUE     RESIDUE
                                         JKSN      AT 25C       5 DAY     HI LEVEL                  TOTAL     TOT VOL     TOT NFLT
                                         JTU      MICROMHO      MG/L        MG/L        PPTH        MG/L        MG/L        MG/L
                                      --------    --------    --------    --------    --------    --------    --------    --------
MEAN...............................    745.000     103.000      37.600     215.000       2.470     931.000     330.000     738.000
STANDARD DEVIATION.................    391.000      58.800      51.700     116.000       4.510     330.000     227.000     302.000
COEF. OF VARIATION.................      0.525       0.568       1.376       0.540       1.822       0.354       0.687       0.409
PARAMETER RANGE
               MIN.................     31.000      49.000       1.000      23.000       1.000     175.000      24.000       8.000
               MAX.................   3000.000     650.000     885.000    1740.000    1000.000    5220.000    2250.000    4530.000
# OF EVENTS........................         13          17          13          18           9          17          16          18
TOTAL FLOW VOLUME(INCH)............      2.840       3.118       3.327       3.536       0.852       3.654       3.315       3.641
TOTAL MASS LOAD(LBS)...............  *********  **********    2240.000   13600.000      37.700   60900.000   19600.000   48100.000
CONCENTRATION(LBS/AC-IN)...........  *********  **********       8.520      48.700       0.560     211.000      74.900     167.000

                                         535         605         620         671       31504
                                       RESIDUE      ORG N       NO3-N      PHOS-D     TOT COLI
                                       VOL NFLT       N         TOTAL      ORTHO      MFIM LES
                                         MG/L        MG/L        MG/L      MG/L P     LN/100ML
                                      --------    --------    --------    --------    --------
MEAN...............................    151.000       4.100       0.481       0.562      15.800
STANDARD DEVIATION.................     82.600       4.080       0.185       0.416      16.600
COEF. OF VARIATION.................      0.549       0.995       0.385       0.741       2.360
PARAMETER RANGE
               MIN.................     10.000       0.600       0.010       0.050      10.100
               MAX.................    720.000      34.300       1.200       4.700      18.300
# OF EVENTS........................         12          14          13          13           4
TOTAL FLOW VOLUME(INCH)............      2.238       2.833       1.486       1.963       0.336
TOTAL MASS LOAD(LBS)...............   6030.000     208.000      12.800      19.700      32.900
CONCENTRATION(LBS/AC-IN)...........     34.100       0.929       0.109       0.127      29.600
```

*** TABLE X - 80. ***

```
                              *************************************
                              *       SUMMARY OF EVENTS           *
                              *************************************
                              *       CATCHMENT FILE : 52         *
                   ****************************************************************
                   * LINCOLN, NEBRASKA.   63RD AND HOLDREGE.             (NB 1 2) *
                   ****************************************************************
                   *   STORM SEWERED AREA          CATCHMENT AREA   85.00 ACRES *
                   ****************************************************************


                      RAINFALL                                                FLOW
                      --------                                                ----

EVENT RAIN  DATE(START-END)   DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION   VOLUME   RUNOFF   PEAK   DRY
      GAGE  YR,MON,D,HR,MIN    (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)   COEFF.   FLOW   DAYS
                                                IN/HR IN/HR  HRS                                                 CFS
----- ----  ---------------  --------  ------  ----  ----   ----- ---------------  --------   ------   ------   ----   ----


  1   123    72/ 4/15 16:15    8.50    0.600  0.071  0.40    1.67  72/ 4/15 16:55    2.08      0.535    0.891   30.95  5.00
             72/ 4/16  0:45                                        72/ 4/15 19: 0

  2   123    72/ 5/11 11:15    4.50    0.620  0.138  0.40    3.50  72/ 5/11 12:35    2.67      0.783    1.263   64.21  3.00
             72/ 5/11 15:45                                        72/ 5/11 15:15

  3   123    72/ 7/25 10: 0    5.00    0.800  0.160  0.16    3.50  72/ 7/25 11:25    2.42      0.130    0.163    7.74  7.00
             72/ 7/25 15: 0                                        72/ 7/25 13:50

  4   123    72/ 7/31 17: 0    1.50    0.350  0.233  0.23    1.58  72/ 7/31 18:20    1.25      0.046    0.131    4.18  3.00
             72/ 7/31 18:30                                        72/ 7/31 19:35

  5   123    73/ 3/ 9 24: 0    9.00    0.900  0.100  0.10    6.50  73/ 3/10  2:55    8.25      0.903    1.003   18.10
             73/ 3/10  9: 0                                        73/ 3/10 11:10

  6   123    73/ 3/22  7: 0   24.17    1.650  0.068  0.07   18.00  73/ 3/23  1: 0    6.58      0.997    0.604   26.45
             73/ 3/23  7:10                                        73/ 3/23  7:35

  7   123    73/ 4/19  8: 0    1.50    0.250  0.167  0.17    0.50  73/ 4/19  8:30    1.25      0.050    0.201   13.46
             73/ 4/19  9:30                                        73/ 4/19  9:45

  8   123    73/ 6/ 2  5: 0   19.17    0.300  0.016  0.02   17.92  73/ 6/ 2 22: 5    2.83      0.257    0.856   18.10
             73/ 6/ 3  0:10                                        73/ 6/ 3  0:55

  9   123    73/ 6/ 4  8: 0    1.50    0.150  0.100  0.10    0.75  73/ 6/ 4  8: 5    1.17      0.046    0.309    4.80
             73/ 6/ 4  9:30                                        73/ 6/ 4  9:15

 10   123    73/ 6/ 5  5: 0    0.50    0.150  0.300  0.30    0.58  73/ 6/ 5  5:10    0.83      0.059    0.392   13.46
             73/ 6/ 5  5:30                                        73/ 6/ 5  6: 0

 11   123    73/ 6/18  6: 0    0.50    0.220  0.440  0.44    0.75  73/ 6/18  6:45    0.58      0.032    0.144   13.46
             73/ 6/18  6:30                                        73/ 6/18  7:20

 12   123    73/ 7/13 10: 0    2.00    1.230  0.615  0.61    0.83  73/ 7/13 10:30    2.00      0.468    0.381   77.35
             73/ 7/13 12: 0                                        73/ 7/13 12:30

 13   123    73/ 7/18  4:45    0.91    0.600  0.656  1.61    0.33  73/ 7/18  4:50    1.08      0.209    0.349   51.21
             73/ 7/18  5:40                                        73/ 7/18  5:55

 14   123    74/ 5/26  5:10    1.08    0.850  0.784  1.60    0.58  74/ 5/26  5:15    1.25      0.672    0.791  111.54
             74/ 5/26  6:15                                        74/ 5/26  6:30
```

*** TABLE X - 81. ***

```
                                          ***************************
                                          *    STATISTICAL SUMMARY  *
                                          ***************************
                                          *    CATCHMENT FILE : 52  *
                                 ************************************************
                                 * LINCOLN, NEBRASKA.   63RD AND HOLDREGE.        (NB 1 2) *
                                 ************************************************
                                 *   STORM SEWERED AREA        CATCHMENT AREA   85.00 ACRES *
                                 ************************************************

                                         70          95         310         340         480         500         505         530
                                       TURB    CNDUCTVY         BOD         COD    SALINITY     RESIDUE     RESIDUE     RESIDUE
                                       JKSN      AT 25C       5 DAY    HI LEVEL                   TOTAL     TOT VOL    TOT NFLT
                                        JTU    MICROMHO        MG/L        MG/L        PPTH        MG/L        MG/L        MG/L
                                   --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................  779.000      90.000      22.100     157.000       1.010    1130.000     238.000     828.000
STANDARD DEVIATION................  178.000      33.000      32.500     119.000       0.031     277.000     107.000     228.000
COEF. OF VARIATION................    0.228       0.367       1.472       0.763       0.030       0.244       0.449       0.276
PARAMETER RANGE
          MIN.....................   50.000      40.000       0.600      24.000       1.000     115.000      50.000      30.000
          MAX..................... 2000.000    1090.000     350.000    1450.000       2.000    3130.000    1310.000    2230.000
# OF EVENTS.......................       11          13          11          14           4          11          11          12
TOTAL FLOW VOLUME(INCH)...........    4.540       4.040       4.568       5.187       1.411       3.975       3.952       4.509
TOTAL MASS LOAD(LBS)..............*********** ***********  1940.000   15600.000      27.500   86800.000   18100.000   71900.000
CONCENTRATION(LBS/AC-IN)..........*********** ***********     5.000      35.500       0.229     257.000      54.000     188.000

                                        535         605         620         671       31504
                                    RESIDUE       ORG N      NO3-N      PHOS-D    TOT COLI
                                   VOL NFLT           N       TOTAL       ORTHO    MFIM LES
                                       MG/L        MG/L        MG/L      MG/L P   LN/100ML
                                   --------    --------    --------    --------    --------
MEAN..............................  119.000       3.070       0.847       0.156      14.500
STANDARD DEVIATION................   30.600       0.783       2.870       0.057       0.000
COEF. OF VARIATION................    0.258       0.255       3.386       0.368       0.000
PARAMETER RANGE
          MIN.....................    6.000       1.200       0.100       0.010      13.400
          MAX.....................  315.000       7.400      71.000       0.380      14.900
# OF EVENTS.......................        7          11          11          11           1
TOTAL FLOW VOLUME(INCH)...........    1.404       3.427       3.375       3.665       0.122
TOTAL MASS LOAD(LBS)..............  3390.000     202.000      55.100      11.000      30.700
CONCENTRATION(LBS/AC-IN)..........   26.900       0.695       0.192       0.035      28.400
```

*** TABLE X - 82. ***

```
                              ******************************
                              *      SUMMARY OF EVENTS     *
                              ******************************
                              *     CATCHMENT FILE : 53    *
                  ********************************************************
                  * LINCOLN, NEBRASKA.   78TH AND 'A' STREET.      (NB 1 3) *
                  ********************************************************
                  *   STORM SEWERED AREA        CATCHMENT AREA  357.00 ACRES *
                  ********************************************************


                        RAINFALL                                               FLOW
                        --------                                               ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK  BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN  LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR IN/HR HRS                                              CFS
-----  ----  ---------------    --------  ------  ----  ----  ----- ---------------    --------  ------  ------  ----  ----


  1    123    72/ 4/27 12: 0      9.00    1.460  0.162  0.75   3.00  72/ 4/27 14: 0      8.00    0.156   0.107  16.99  5.00
              72/ 4/27 21: 0                                         72/ 4/27 22: 0

  2    123    72/ 5/22 24: 0      2.50    0.850  0.340  1.00   1.17  72/ 5/23  0:20      3.17    0.086   0.102  27.23 10.00
              72/ 5/23  2:30                                         72/ 5/23  3:30

  3    123    72/ 6/ 4  5:20      0.20    0.160  0.800  1.20   1.00  72/ 6/ 4  6:20      1.92    0.006   0.040   2.63  5.00
              72/ 6/ 4  5:32                                         72/ 6/ 4  8:15

  4    123    72/ 6/13 12:15      8.75    0.650  0.074  0.50   6.00  72/ 6/13 18: 3      3.95    0.066   0.102  12.07  2.00
              72/ 6/13 21: 0                                         72/ 6/13 22: 0

  5    123    72/ 6/16 17: 0      1.25    0.750  0.600  1.40   0.73  72/ 6/16 17:39      0.35    0.020   0.027  37.13  1.00
              72/ 6/16 18:15                                         72/ 6/16 18: 0

  6    123    72/ 7/ 4  9: 0      1.00    0.050  0.050  0.08   1.00  72/ 7/ 4  9:40      0.84    0.000   0.004   0.11 15.00
              72/ 7/ 4 10: 0                                         72/ 7/ 4 10:30

  7    123    72/ 7/25 10: 0      5.00    0.800  0.160  0.16   5.00  72/ 7/25 10: 5      5.92    0.071   0.088  21.66  7.00
              72/ 7/25 15: 0                                         72/ 7/25 16: 0

  8    123    73/ 6/ 5  5: 0      0.75    0.150  0.200  0.20   0.83  73/ 6/ 5  5:30      1.00    0.002   0.015   1.16
              73/ 6/ 5  5:45                                         73/ 6/ 5  6:30

  9    123    73/ 6/18  6:30      0.50    0.230  0.460  0.60   0.83  73/ 6/18  7: 0      1.00    0.006   0.028   3.25
              73/ 6/18  7: 0                                         73/ 6/18  8: 0

 10    123    73/ 6/30  7:30      0.75    0.100  0.133  0.20   1.25  73/ 6/30  7:45      1.00    0.002   0.020   1.24
              73/ 6/30  8:15                                         73/ 6/30  8:45
```

*** TABLE X - 83. ***

```
                                        ******************************
                                        *     STATISTICAL SUMMARY    *
                                        ******************************
                                        *     CATCHMENT FILE : 53    *
                              ***********************************************************
                              * LINCOLN, NEBRASKA.   78TH AND 'A' STREET.       (NB 1 3) *
                              ***********************************************************
                              *   STORM SEWERED AREA        CATCHMENT AREA  357.00 ACRES *
                              ***********************************************************

                                          70         95        310        340        480        500        505        530
                                        TURB   CNDUCTVY        BOD        COD   SALINITY    RESIDUE    RESIDUE    RESIDUE
                                        JKSN     AT 25C      5 DAY   HI LEVEL                 TOTAL    TOT VOL   TOT NFLT
                                         JTU   MICROMHO       MG/L       MG/L       PPTH       MG/L       MG/L       MG/L
                                    --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................  1150.000    142.000      8.740     94.200      1.030   1720.000    293.000   1530.000
STANDARD DEVIATION................   581.000     59.600      5.110     37.800      0.027    926.000    114.000    781.000
COEF. OF VARIATION................     0.503      0.421      0.584      0.401      0.026      0.537      0.391      0.510
PARAMETER RANGE
            MIN...................    25.000     60.000      1.000      3.000      1.000     32.000     20.000     10.000
            MAX...................  5000.000    850.000     50.000   1360.000      6.000  14000.000   1470.000  20200.000
# OF EVENTS.......................         9         11          9         10          5         10          9         10
TOTAL FLOW VOLUME(INCH)...........     0.261      0.433      0.393      0.432      0.369      0.398      0.260      0.416
TOTAL MASS LOAD(LBS)..............  **********  **********  278.000   3290.000     30.700  55600.000   6170.000  51600.000
CONCENTRATION(LBS/AC-IN)..........  **********  **********    1.980     21.400      0.233    391.000     66.300    347.000

                                         535        605        620        671      31504
                                     RESIDUE      ORG N      NO3-N     PHOS-D   TOT COLI
                                    VOL NFLT          N      TOTAL      ORTHO   MFIM LES
                                        MG/L       MG/L       MG/L     MG/L P   LN/100ML
                                    --------   --------   --------   --------   --------
MEAN..............................   189.000      3.590      0.703      0.665     12.300
STANDARD DEVIATION................    90.500      1.350      0.318      0.319     11.100
COEF. OF VARIATION................     0.478      0.376      0.453      0.479      0.298
PARAMETER RANGE
            MIN...................     1.000      0.200      0.120      0.050      8.010
            MAX...................  1620.000     15.900      1.800      1.700     13.500
# OF EVENTS.......................         5         10         11         10          5
TOTAL FLOW VOLUME(INCH)...........     0.180      0.229      0.373      0.251      0.141
TOTAL MASS LOAD(LBS)..............  2760.000     66.500     21.200     13.500     30.000
CONCENTRATION(LBS/AC-IN)..........    42.900      0.814      0.159      0.151     26.100
```

*** TABLE X - 84. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 54

LONG ISLAND, NEW YORK.   WESTBURY.   (NY 1 1)

STORM SEWERED AREA   CATCHMENT AREA 14.70 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	66/ 9/14 17:10 66/ 9/15 4:20	11.17	1.421	0.127	0.30	10.17	66/ 9/14 17:30 66/ 9/15 6: 0	12.50	0.242	0.170	0.76	
2	129	66/10/19 23:10 66/10/21 1:10	26.00	3.140	0.121	0.60	5.17	66/10/19 23:40 66/10/21 1: 0	25.34	0.636	0.203	1.98	
3	129	67/ 5/ 7 9:40 67/ 5/ 7 16:30	6.83	1.130	0.165	0.30	3.83	67/ 5/ 7 10: 0 67/ 5/ 7 19:30	9.50	0.294	0.260	1.07	
4	129	68/ 5/29 23: 0 68/ 5/30 11:10	12.17	3.600	0.296	1.20	11.00	68/ 5/29 23: 0 68/ 5/30 12: 0	13.00	0.762	0.212	3.80	
5	129	66/ 9/21 3:40 66/ 9/21 20: 0	16.34	3.479	0.213	1.02	11.00	66/ 9/21 6: 0 66/ 9/21 20: 0	14.00	0.770	0.221	5.93	
6	129	67/ 4/27 20:40 67/ 4/28 14: 0	17.33	1.490	0.086	0.36	7.50	67/ 4/27 21: 0 67/ 4/28 14:30	17.50	0.201	0.135	0.59	
7	129	67/ 5/ 6 7:50 67/ 5/ 6 13:40	5.83	0.650	0.111	0.24	3.33	67/ 5/ 6 8: 0 67/ 5/ 6 14:30	6.50	0.096	0.148	0.53	
8	129	67/ 8/25 3: 0 67/ 8/25 8: 0	5.00	1.741	0.348	1.14	2.50	67/ 8/25 3:30 67/ 8/25 8:50	5.33	0.217	0.125	2.30	
9	129	67/ 8/26 19: 0 67/ 8/26 20:20	1.33	0.720	0.540	0.96	1.50	67/ 8/26 19:30 67/ 8/26 21:30	2.00	0.102	0.142	2.10	

*** TABLE X - 85. ***

```
                    ***************************
                    *     SUMMARY OF EVENTS   *
                    ***************************
                    *    CATCHMENT FILE : 58  *
*****************************************************************
* WINSTON-SALEM, NORTH CAROLINA.  TAR BRANCH.        (NC 1 1) *
*****************************************************************
*   STORM SEWERED AREA          CATCHMENT AREA  384.00 ACRES *
*****************************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	67/12/18 10:50 67/12/18 21: 0	10.17	1.003	0.099	1.20	0.33	67/12/18 10: 0 67/12/18 22:15	12.25	0.528	0.527	97.00	
2	129	68/ 3/16 17:15 68/ 3/17 9:40	16.42	1.130	0.069	1.08	2.58	68/ 3/16 17:20 68/ 3/17 9:50	16.50	0.692	0.612	132.00	
3	129	68/ 4/23 22:20 68/ 4/24 11:40	13.33	0.520	0.039	0.96	12.25	68/ 4/23 22:25 68/ 4/24 12:30	14.08	0.316	0.608	73.00	
4	129	68/ 6/26 21:55 68/ 6/26 22:30	0.59	0.672	1.146	2.04	0.59	68/ 6/26 21:55 68/ 6/26 24: 0	2.09	0.375	0.558	265.00	
5	129	68/ 7/12 19: 0 68/ 7/12 22:20	3.33	1.407	0.422	3.24	1.08	68/ 7/12 19: 0 68/ 7/12 22:20	3.33	0.774	0.550	397.00	
6	129	68/10/18 5:20 68/10/19 15:15	33.92	2.883	0.085	2.28	24.50	68/10/18 5:20 68/10/19 16: 0	34.67	1.319	0.458	175.00	
7	129	69/ 4/15 23:25 69/ 4/16 8:20	8.92	0.880	0.099	0.60	0.58	69/ 4/15 23:30 69/ 4/16 9: 0	9.50	0.450	0.512	71.00	
8	129	69/ 5/27 2:30 69/ 5/27 10: 0	7.50	1.220	0.163	0.96	0.67	69/ 5/27 2:30 69/ 5/27 15: 0	12.50	0.610	0.500	105.00	
9	129	69/ 6/ 9 19:50 69/ 6/ 9 22: 0	2.17	0.710	0.328	1.68	0.25	69/ 6/ 9 19:50 69/ 6/ 9 23: 0	3.17	0.180	0.253	134.00	
10	129	69/ 6/11 0:20 69/ 6/11 8:15	7.92	3.030	0.383	3.84	1.08	69/ 6/11 0:20 69/ 6/11 9:10	8.83	2.122	0.700	945.00	
11	129	69/ 6/15 1:55 69/ 6/15 19:10	17.25	2.220	0.129	3.24	16.08	69/ 6/15 1:55 69/ 6/15 20: 0	18.08	0.782	0.352	171.00	
12	129	69/ 6/18 19: 5 69/ 6/18 19:20	0.25	0.380	1.520	3.24	0.25	69/ 6/18 19: 5 69/ 6/18 21: 0	1.92	0.153	0.403	210.00	
13	129	69/ 6/21 22: 5 69/ 6/21 22:55	0.83	0.816	0.981	3.00	0.42	69/ 6/21 22: 5 69/ 6/21 24: 0	1.92	0.360	0.441	316.00	
14	129	69/ 7/28 15:55 69/ 7/28 21:50	5.92	1.380	0.233	2.64	4.84	69/ 7/28 15:55 69/ 7/28 23: 0	7.09	0.656	0.476	290.00	
15	129	69/ 8/ 3 11:25 69/ 8/ 3 16:30	5.09	0.431	0.085	0.96	0.17	69/ 8/ 3 11:25 69/ 8/ 3 22: 0	10.59	0.244	0.567	80.00	
16	129	69/12/10 8:25 69/12/10 18:30	10.09	1.231	0.122	0.60	6.84	69/12/10 8:30 69/12/10 18:30	10.00	0.477	0.387	82.00	
17	129	70/ 6/13 22:25 70/ 6/14 0:40	2.25	2.050	0.911	3.36	0.67	70/ 6/13 22:30 70/ 6/14 1:10	2.67	1.852	0.904	857.00	

*** TABLE X - 86. ***

```
                                           *************************************
                                           *        SUMMARY OF EVENTS          *
                                           *************************************
                                           *        CATCHMENT FILE : 59        *
                                 ************************************************************************
                                 * DURHAM, NORTH CAROLINA. THIRD FORK BASIN.                   (NC 2 1) *
                                 ************************************************************************
                                 *   STORM SEVERED AREA             CATCHMENT AREA 1069.00 ACRES        *
                                 ************************************************************************


                                      RAINFALL                                                      FLOW
                                      --------                                                      ----

EVENT  RAIN  DATE(START-END)      DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)      DURATION    VOLUME    RUNOFF   PEAK   DRY
       GAGE  YR,MON,D,HR,MIN       (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN       (HRS)      (INCH)    COEFF.   FLOW   DAYS
                                                    IN/HR  IN/HR   HRS                                                       CFS
-----  ----  ---------------      --------  ------  -----  ----    ----- ---------------      --------    ------    ------   ----   ----


  1    129     69/ 6/ 9 14: 0       9.75    0.640  0.066  1.08     6.75  69/ 6/ 9 13:50       11.17      0.165     0.258   77.00
               69/ 6/ 9 23:45                                            69/ 6/10  1: 0

  2    129     69/ 6/15  9:35      11.92    1.800  0.151  2.52     9.25  69/ 6/15  9:35       14.42      0.827     0.459  500.00
               69/ 6/15 21:30                                            69/ 6/15 24: 0

  3    129     69/ 7/28 16:15       9.08    0.930  0.102  1.32     0.91  69/ 7/28 16: 0       10.00      0.358     0.385  485.00
               69/ 7/29  1:20                                            69/ 7/29  2: 0

  4    129     69/ 8/ 1 11:25       5.17    0.716  0.139  1.92     4.17  69/ 8/ 1 11:25        6.59      0.202     0.283  137.00
               69/ 8/ 1 16:35                                            69/ 8/ 1 18: 0

  5    129     69/ 8/ 3 16:15       1.75    0.835  0.477  2.88     0.91  69/ 8/ 3 16:15        4.75      0.504     0.603  593.00
               69/ 8/ 3 18: 0                                            69/ 8/ 3 21: 0

  6    129     69/ 8/ 4  5:35       2.67    0.501  0.188  0.72     1.58  69/ 8/ 4  6: 0        4.50      0.211     0.421  199.00
               69/ 8/ 4  8:15                                            69/ 8/ 4 10:30

  7    129     69/ 8/13 16:10       5.59    0.531  0.095  1.20     5.17  69/ 8/13 16:10        6.84      0.187     0.352  120.00
               69/ 8/13 21:45                                            69/ 8/13 23: 0

  8    129     69/ 8/15 13:50       3.58    1.955  0.546  4.68     0.58  69/ 8/15 13:30        7.50      0.857     0.438  800.00
               69/ 8/15 17:25                                            69/ 8/15 21: 0

  9    129     69/ 9/ 2 14:40       1.17    0.730  0.625  2.52     0.59  69/ 9/ 2 14: 0        4.00      0.329     0.450  593.00
               69/ 9/ 2 15:50                                            69/ 9/ 2 18: 0

 10    129     69/ 9/17 11:45       3.08    1.290  0.418  3.12     2.50  69/ 9/17 11:45        3.08      0.486     0.377  732.00
               69/ 9/17 14:50                                            69/ 9/17 14:50

 11    129     69/ 9/24 12: 5       4.42    0.600  0.136  0.72     3.25  69/ 9/24 12: 0        6.00      0.339     0.564  217.00
               69/ 9/24 16:30                                            69/ 9/24 18: 0

 12    129     69/12/10  7:55       7.17    1.046  0.146  1.68     6.92  69/12/10  7:50        9.17      0.449     0.429  205.00
               69/12/10 15: 5                                            69/12/10 17: 0

 13    129     69/12/21 22:15       5.41    0.827  0.153  0.72     4.75  69/12/21 22:30        7.00      0.303     0.367  105.00
               69/12/22  3:40                                            69/12/22  5:30

 14    129     69/12/25 19:25       5.75    0.729  0.127  0.36     3.34  69/12/25 19: 0        9.50      0.425     0.583  116.00
               69/12/26  1:10                                            69/12/26  4:30

 15    129     70/ 2/16  7:40      21.08    2.110  0.100  0.84    17.33  70/ 2/16  8: 0       25.00      1.240     0.588  245.00
               70/ 2/17  4:45                                            70/ 2/17  9: 0

 16    129     72/ 6/20  6:10       2.75    0.202  0.073  0.50     2.00  72/ 6/20  6:16        5.90      0.060     0.297   75.00
               72/ 6/20  8:55                                            72/ 6/20 12:10

 17    129     72/ 8/28 10: 5       2.42    0.820  0.339  1.30     0.71  72/ 8/28 10:30        0.50      0.001     0.002    4.00
               72/ 8/28 12:30                                            72/ 8/28 11: 0

 18    129     72/ 9/21  6: 0       4.83    0.342  0.071  0.24     2.91  72/ 9/21  8:55        2.09      0.038     0.111   39.00
               72/ 9/21 10:50                                            72/ 9/21 11: 0


                                                   *** TABLE X - 87. ***
```

```
                                                 ********************************
                                                 * SUMMARY OF EVENTS(CONTINUED) *
                                                 ********************************
                                                 *       CATCHMENT FILE : 59    *
                                  **************************************************************
                                  * DURHAM, NORTH CAROLINA. THIRD FORK BASIN.         (NC 2 1) *
                                  **************************************************************
                                  *    STORM SEWERED AREA         CATCHMENT AREA 1069.00 ACRES *
                                  **************************************************************


                                          RAINFALL                                               FLOW
                                          --------                                               ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN DATE(START-END)     DURATION   VOLUME    RUNOFF    PEAK   DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG   YR,MON,D,HR,MIN     (HRS)      (INCH)    COEFF.    FLOW   DAYS
                                                   IN/HR  IN/HR   HRS                                                      CFS
-----  ----  ---------------     --------  ------  -----  -----   ----- ---------------     --------   ------    ------    ----   ----


  19    129    72/10/ 5  8: 0     6.16     0.264  0.043   0.25    4.16  72/10/ 5  8:50      5.17      1.266     4.804  455.00
               72/10/ 5 14:10                                           72/10/ 5 14: 0
```

*** TABLE X - 87. ***

```
                                        ************************************
                                        *      STATISTICAL SUMMARY         *
                                        ************************************
                                        *      CATCHMENT FILE : 59         *
                             ************************************************************************
                             * DURHAM, NORTH CAROLINA. THIRD FORK BASIN.             (NC 2 1) *
                             ************************************************************************
                             *   STORM SEWERED AREA          CATCHMENT AREA 1069.00 ACRES *
                             ************************************************************************

                                     310        340        341        400        410        500        505        530
                                     BOD        COD   DISS COD     PH        T ALK     RESIDUE    RESIDUE    RESIDUE
                                    5 DAY   HI LEVEL                         CACO3      TOTAL    TOT VOL   TOT NFLT
                                    MG/L       MG/L       MG/L       SU       MG/L       MG/L       MG/L       MG/L
                                 ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
MEAN.............................    127.000    161.000     67.500      6.980     37.000    551.000    210.000   1500.000
STANDARD DEVIATION...............     13.600     57.300      2.020      0.066      7.950    213.000     14.100    171.000
COEF. OF VARIATION...............      0.107      0.356      0.030      0.009      0.215      0.386      0.067      0.114
PARAMETER RANGE
          MIN....................     39.000      0.700     61.000      6.800     26.000     11.400    105.000     13.400
          MAX....................    150.000    605.000    100.000      7.500     98.000   7300.000    460.000   5460.000
# OF EVENTS......................          2          4          2          3          2          4          4          4
TOTAL FLOW VOLUME(INCH)..........      1.326      1.366      0.039      1.361      0.092      1.364      1.364      1.366
TOTAL MASS LOAD(LBS).............  40900.000  53300.000    644.000 **********    825.000 182000.000  69600.000 496000.000
CONCENTRATION(LBS/AC-IN).........     28.800     36.500     15.300 **********      8.380    125.000     47.700    339.000

                                     535        625        665        680        916        927       1034       1042
                                   RESIDUE   TOT KJEL    PHOS-P    T ORG C    CALCIUM    MGNSIUM   CHROMIUM    COPPER
                                   VOL NFLT      N        P-WET       C        CA-TOT     MG.TOT     CR.TOT     CU.TOT
                                    MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       UG/L       UG/L
                                 ---------  ---------  ---------  ---------  ---------  ---------  ---------  ---------
MEAN.............................    132.000      0.281      0.820     27.300      1.860     14.800      0.152      0.112
STANDARD DEVIATION...............     34.100      0.160      0.358      8.130      0.005      0.032      0.000      0.000
COEF. OF VARIATION...............      0.259      0.570      0.437      0.298      0.002      0.002      0.002      0.002
PARAMETER RANGE
          MIN....................     40.000      0.200      0.270      0.500      1.100      7.700      0.100      0.100
          MAX....................    375.000      1.400      3.500     72.000      4.900     20.400      0.230      0.150
# OF EVENTS......................          4          3          3          3          1          1          1          1
TOTAL FLOW VOLUME(INCH)..........      1.366      1.364      1.364      0.099      1.266      1.266      1.266      1.266
TOTAL MASS LOAD(LBS).............  43600.000     92.800    271.000    657.000    570.000   4550.000      0.047      0.034
CONCENTRATION(LBS/AC-IN).........     29.800      0.064      0.186      6.180      0.421      3.360      0.000      0.000

                                    1045       1051       1055        690      31616
                                    IRON       LEAD    MANGNESE   T-CARBON   FEC COLI
                                    TOTAL     PB.TOT      MN          C      MFM-FCBR
                                    UG/L       UG/L       UG/L       MG/L    LN/100ML
                                 ---------  ---------  ---------  ---------  ---------
MEAN.............................  21400.000    800.000   1270.000     27.100     39.200
STANDARD DEVIATION...............   1990.000    447.000    517.000      0.061     39.000
COEF. OF VARIATION...............      0.093      0.559      0.407      0.002      0.797
PARAMETER RANGE
          MIN....................   1600.000    100.000    350.000     10.200      0.074
          MAX....................  27000.000   1510.000   2310.000     35.800     46.100
# OF EVENTS......................          2          2          2          1          2
TOTAL FLOW VOLUME(INCH)..........      0.098      0.098      0.098      1.266      0.098
TOTAL MASS LOAD(LBS).............    509.000     19.000     30.200      8.330     57.700
CONCENTRATION(LBS/AC-IN).........      4.860      0.181      0.288      0.006     53.100
```

*** TABLE X - 88. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 60

BUCYRUS, OHIO. SEWER DISTRICT NO.8. (OH 1 1)

COMBINED SEWERED AREA CATCHMENT AREA 179.00 ACRES

EVENT	RAIN GAGE	RAINFALL DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	FLOW DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	69/ 3/24 4: 0 69/ 3/24 8:40	4.67	0.310	0.066	0.24	1.67	69/ 3/24 4:50 69/ 3/24 9: 0	4.17	0.036	0.116	4.40	
2	129	69/ 4/ 5 2:40 69/ 4/ 5 12:10	9.50	1.470	0.155	1.50	1.83	69/ 4/ 5 3: 0 69/ 4/ 5 11: 0	8.00	0.473	0.322	22.80	
3	129	69/ 5/17 22: 0 69/ 5/18 3:30	5.50	11.334	2.061	1.64	2.08	69/ 5/17 22:15 69/ 5/18 3:30	5.25	0.331	0.029	32.40	
4	129	69/ 6/13 2:30 69/ 6/13 4: 0	1.50	1.200	0.800	2.22	1.25	69/ 6/13 2:51 69/ 6/13 8: 0	5.15	0.250	0.208	29.50	
5	129	69/ 7/11 20:50 69/ 7/11 22: 0	1.17	1.550	1.327	5.58	0.62	69/ 7/11 21:12 69/ 7/11 24: 0	2.80	0.279	0.180	50.80	
6	129	69/ 7/17 11:20 69/ 7/17 15: 0	3.67	1.016	0.277	2.40	1.75	69/ 7/17 11:50 69/ 7/17 17: 0	5.17	0.192	0.189	25.80	
7	129	69/ 7/27 19:20 69/ 7/27 20: 0	0.67	0.402	0.602	1.14	0.75	69/ 7/27 19:52 69/ 7/27 21: 0	1.14	0.062	0.154	20.90	
8	129	69/ 8/ 9 16:20 69/ 8/ 9 18:40	2.33	0.506	0.217	1.56	1.83	69/ 8/ 9 17:45 69/ 8/ 9 20: 0	2.25	0.086	0.169	22.70	
9	129	69/ 8/16 8:40 69/ 8/16 12: 0	3.34	0.702	0.211	1.08	2.59	69/ 8/16 11: 5 69/ 8/16 13: 0	1.92	0.110	0.157	23.10	
10	129	69/ 9/ 6 4:50 69/ 9/ 6 6:40	1.83	0.228	0.125	0.66	1.92	69/ 9/ 6 6:45 69/ 9/ 6 7:30	0.75	0.021	0.090	15.90	

*** TABLE X - 89. ***

```
                                 ************************************
                                 *        SUMMARY OF EVENTS         *
                                 ************************************
                                 *        CATCHMENT FILE : 61       *
                         ****************************************************
                         * WINDSOR, ONTARIO.  LABADIE ROAD.          (ON 1 1) *
                         ****************************************************
                         *   STORM SEWERED AREA      CATCHMENT AREA  29.50 ACRES *
                         ****************************************************


                                    RAINFALL                                                  FLOW
                                    --------                                                  ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME   AVG    PEAK  BASIN DATE(START-END)   DURATION    VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)   RAIN   RAIN  LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                   IN/HR  IN/HR HRS                                                   CFS
-----  ----  ---------------    --------  ------   ----   ----  ----- ---------------   --------    ------   ------   ----  ----

    1   129  72/ 9/17 24: 0       6.00   0.562  0.094   0.21    1.50 72/ 9/18  0:30       10.00    0.066    0.117   1.11
             72/ 9/18  6: 0                                          72/ 9/18 10:30

    2   129  72/ 9/26  1: 0      10.00   0.514  0.051   0.21    6.50 72/ 9/26  6:30        3.50    0.081    0.157   0.91
             72/ 9/26 11: 0                                          72/ 9/26 10: 0

    3   129  72/10/21 14: 0      44.00   2.038  0.046   0.12   36.00 72/10/22  0:30       34.50    0.319    0.156   0.58
             72/10/23 10: 0                                          72/10/23 11: 0

    4   129  72/11/10 24: 0       4.00   0.115  0.029   0.07    1.75 72/11/11  0:45        5.00    0.014    0.118   0.23
             72/11/11  4: 0                                          72/11/11  5:45

    5   129  72/12/12  6: 0      18.00   0.980  0.054   0.29   17.00 72/12/12 19: 0       10.00    0.077    0.079   0.37
             72/12/12 24: 0                                          72/12/13  5: 0

    6   129  73/ 1/ 3 18: 0       9.00   0.770  0.086   0.27    2.50 73/ 1/ 3 19:30       11.00    0.110    0.143   1.25
             73/ 1/ 4  3: 0                                          73/ 1/ 4  6:30

    7   129  73/ 2/ 1 17: 0       3.00   0.110  0.037   0.06    1.50 73/ 2/ 1 17:30        5.00    0.006    0.051   0.13
             73/ 2/ 1 20: 0                                          73/ 2/ 1 22:30

    8   129  73/ 3/10  1: 0      12.00   0.947  0.079   0.20    7.00 73/ 3/10  5: 0        8.00    0.141    0.149   1.03
             73/ 3/10 13: 0                                          73/ 3/10 13: 0

    9   129  73/ 3/16 19: 0      29.00   1.273  0.044   0.20    7.25 73/ 3/16 20:15       31.00    0.326    0.256   2.90
             73/ 3/17 24: 0                                          73/ 3/18  3:15

   10   129  73/ 3/29 17: 0       7.00   0.504  0.072   0.18    3.50 73/ 3/29 18:30        8.00    0.047    0.094   0.35
             73/ 3/29 24: 0                                          73/ 3/30  2:30

   11   129  73/ 3/31 18: 0       6.00   0.097  0.016   0.09    6.00 73/ 3/31 21: 0        9.00    0.069    0.715   1.82
             73/ 3/31 24: 0                                          73/ 4/ 1  6: 0

   12   129  73/ 4/ 9 15: 0       8.00   0.345  0.043   0.08    5.00 73/ 4/ 9 18: 0        6.00    0.050    0.145   0.37
             73/ 4/ 9 23: 0                                          73/ 4/ 9 24: 0

   13   129  73/ 4/16 16: 0       3.00   0.046  0.015   0.02    1.50 73/ 4/16 17:30        3.00    0.012    0.257   0.52
             73/ 4/16 19: 0                                          73/ 4/16 20:30

   14   129  73/ 5/ 7 19: 0       9.00   0.164  0.018   0.04    3.25 73/ 5/ 7 21:15        8.00    0.005    0.028   0.04
             73/ 5/ 8  4: 0                                          73/ 5/ 8  5:15

   15   129  73/ 5/ 8 10: 0       7.00   0.175  0.025   0.19    7.25 73/ 5/ 8 17:15        4.00    0.037    0.213   1.34
             73/ 5/ 8 17: 0                                          73/ 5/ 8 21:15

   16   129  73/ 5/27 12: 0       9.00   0.401  0.045   0.11    3.50 73/ 5/27 13:30        7.00    0.032    0.081   0.35
             73/ 5/27 21: 0                                          73/ 5/27 20:30

   17   129  73/ 6/ 6 17: 0       2.00   0.184  0.092   0.13    0.00 73/ 6/ 6 17: 0        3.00    0.039    0.210   1.27
             73/ 6/ 6 19: 0                                          73/ 6/ 6 20: 0

   18   129  73/ 6/26 18: 0       5.00   0.903  0.181   0.34    3.00 73/ 6/26 18: 0       11.00    0.139    0.154   1.02
             73/ 6/26 23: 0                                          73/ 6/27  5: 0


                                                  *** TABLE X - 90. ***
```

```
                                   ********************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ********************************
                                   *       CATCHMENT FILE : 61    *
                          ***********************************************************
                          * WINDSOR, ONTARIO.  LABADIE ROAD.                (ON 1 1) *
                          ***********************************************************
                          *    STORM SEWERED AREA         CATCHMENT AREA   29.50 ACRES *
                          ***********************************************************


                            RAINFALL                                                     FLOW
                            --------                                                     ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION   VOLUME  RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)  COEFF.   FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                                  CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------  --------   ------  ------   ----  ----


  19    129    73/ 7/10  8: 0     3.00    0.092  0.031  0.04   2.00  73/ 7/10  8: 0    3.00     0.008   0.091    0.13
               73/ 7/10 11: 0                                        73/ 7/10 11: 0

  20    129    73/ 7/20 12: 0    10.00    0.511  0.051  0.13   4.00  73/ 7/20 14: 0   10.00     0.078   0.153    0.58
               73/ 7/20 22: 0                                        73/ 7/20 24: 0

  21    129    73/ 7/26 10: 0     1.00    0.827  0.827  0.83   0.00  73/ 7/26 10: 0    3.00     0.090   0.109    2.89
               73/ 7/26 11: 0                                        73/ 7/26 13: 0
```

*** TABLE X - 90. ***

```
                                        ******************************
                                        *    STATISTICAL SUMMARY     *
                                        ******************************
                                        *    CATCHMENT FILE : 61     *
                        **********************************************************
                        * WINDSOR, ONTARIO.  LABADIE ROAD.              (ON 1 1) *
                        **********************************************************
                        *   STORM SEWERED AREA       CATCHMENT AREA  29.50 ACRES *
                        **********************************************************

                                         70         80         95        310        400        410        530        535
                                       TURB      COLOR   CNDUCTVY        BOD         PH      T ALK    RESIDUE    RESIDUE
                                       JKSN      PT-CO     AT 25C      5 DAY                 CACO3   TOT NFLT   VOL NFLT
                                        JTU      UNITS   MICROMHO       MG/L         SU       MG/L       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................  459.000    177.000    235.000     16.900      7.500     92.600    384.000    139.000
STANDARD DEVIATION................  201.000     79.500    228.000      8.240      0.213     44.500    251.000     81.500
COEF. OF VARIATION................    0.438      0.448      0.969      0.487      0.028      0.481      0.652      0.586
PARAMETER RANGE
          MIN.....................    7.000     25.000     65.000      1.700      6.750     40.000      1.000      1.000
          MAX..................... 1200.000    440.000   2390.000     78.400      8.020    344.000   1230.000    392.000
# OF EVENTS.......................       14         15         21         20         21         21         21         21
TOTAL FLOW VOLUME(INCH)...........    1.075      1.080      1.746      1.420      1.746      1.746      1.703      1.703
TOTAL MASS LOAD(LBS).............. ********** ********** **********  161.000 **********   1080.000   4300.000   1580.000
CONCENTRATION(LBS/AC-IN).......... ********** ********** **********    3.830 **********     21.000     87.100     31.500

                                        610        615        620        660        900        901        940        945
                                     NH3-N      NO2-N      NO3-N   ORTHOPO4   TOT HARD     C HARD   CHLORIDE    SULFATE
                                     TOTAL      TOTAL      TOTAL        PO4      CACO3      CACO3         CL        SO4
                                      MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................    0.049      0.050      0.845      0.389    101.000     74.700     51.200     27.000
STANDARD DEVIATION................    0.040      0.033      0.399      0.290     30.500     15.900    111.000     14.000
COEF. OF VARIATION................    0.825      0.657      0.472      0.746      0.301      0.213      2.167      0.520
PARAMETER RANGE
          MIN.....................    0.001      0.001      0.100      0.001     55.000     40.000      4.000      1.000
          MAX.....................    0.710      0.570      4.700      2.500    484.000    275.000   1590.000    178.000
# OF EVENTS.......................       18         21         21         21         21         21         21         21
TOTAL FLOW VOLUME(INCH)...........    1.619      1.746      1.746      1.736      1.746      1.746      1.746      1.746
TOTAL MASS LOAD(LBS)..............    0.529      0.587      9.870      4.510   1180.000    872.000    598.000    315.000
CONCENTRATION(LBS/AC-IN)..........    0.011      0.011      0.192      0.088     22.900     16.900     11.600      6.110

                                      31504      31616
                                   TOT COLI   FEC COLI
                                   MFIM LES   MFM-FCBR
                                   LN/100ML   LN/100ML
                                   --------   --------
MEAN..............................   10.400      8.380
STANDARD DEVIATION................   11.200      9.410
COEF. OF VARIATION................    2.106      2.801
PARAMETER RANGE
          MIN.....................    4.610      2.300
          MAX.....................   13.700     12.000
# OF EVENTS.......................       21         21
TOTAL FLOW VOLUME(INCH)...........    1.746      1.730
TOTAL MASS LOAD(LBS)..............   28.200     26.200
CONCENTRATION(LBS/AC-IN)..........   24.300     22.200
```

*** TABLE X - 91. ***

```
*******************************
*      SUMMARY OF EVENTS      *
*******************************
*     CATCHMENT FILE : 62     *
*****************************************************
* BURLINGTON, ONTARIO.  MALVERN ROAD.      (ON 2 1) *
*****************************************************
*  STORM SEWERED AREA       CATCHMENT AREA  57.60 ACRES *
*****************************************************
```

			RAINFALL					FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	73/ 9/22 6:56 73/ 9/22 9:12	2.27	0.710	0.313	2.08	0.72	73/ 9/22 7: 2 73/ 9/22 9: 1	1.98	0.212	0.299	31.82	
2	123	73/ 9/23 9:46 73/ 9/23 11:52	2.10	0.360	0.172	3.52	1.95	73/ 9/23 9:49 73/ 9/23 11:51	2.03	0.107	0.297	25.26	
3	123	73/10/13 16:14 73/10/13 18:48	2.57	0.320	0.125	0.57	1.87	73/10/13 16:34 73/10/13 18:50	2.27	0.086	0.267	8.45	
4	123	73/10/28 12:10 73/10/28 23: 0	10.84	1.160	0.107	1.28	5.27	73/10/28 13: 9 73/10/28 23: 5	9.93	0.390	0.336	8.52	
5	123	73/10/29 11:20 73/10/29 23: 0	11.67	1.480	0.127	2.56	7.28	73/10/29 11:52 73/10/29 23: 5	11.22	0.533	0.360	10.86	
6	123	73/11/14 0:30 73/11/14 10:10	9.66	0.610	0.063	5.76	5.73	73/11/14 0:30 73/11/14 10:15	9.75	0.203	0.332	10.47	
7	123	73/11/28 4:10 73/11/28 11:10	7.00	0.640	0.091	1.77	3.62	73/11/28 7: 0 73/11/28 11:17	4.28	0.152	0.237	9.54	
8	123	74/ 5/ 5 19: 2 74/ 5/ 5 21:24	2.37	0.300	0.127	0.30	1.58	74/ 5/ 5 19:20 74/ 5/ 5 22: 5	2.75	0.088	0.292	4.75	
9	123	74/ 5/ 8 17:55 74/ 5/ 9 11:45	17.83	1.290	0.072	0.36	16.47	74/ 5/ 8 18: 5 74/ 5/ 9 12: 5	18.00	0.361	0.280	5.87	
10	123	74/ 5/15 7:33 74/ 5/15 8:59	1.43	0.120	0.084	0.59	0.55	74/ 5/15 7:37 74/ 5/15 9: 0	1.38	0.032	0.264	4.90	
11	123	74/ 5/16 15:32 74/ 5/17 3:44	12.20	1.070	0.088	2.11	10.08	74/ 5/16 15:40 74/ 5/17 4:30	12.83	0.376	0.352	25.39	
12	123	74/ 5/31 19: 6 74/ 5/31 19:43	0.62	0.570	0.924	3.01	0.47	74/ 5/31 19: 3 74/ 5/31 20:35	1.53	0.214	0.375	31.82	
13	123	74/ 6/19 7:20 74/ 6/19 17:21	10.01	0.740	0.074	0.64	4.78	74/ 6/19 7:35 74/ 6/19 17:30	9.92	0.221	0.298	6.17	
14	123	74/ 6/21 17:44 74/ 6/21 18:25	0.68	0.270	0.395	2.56	0.32	74/ 6/21 17:45 74/ 6/21 19:15	1.50	0.073	0.272	20.42	
15	123	74/ 6/30 8:37 74/ 6/30 9:19	0.70	0.150	0.213	0.64	0.64	74/ 6/30 8:43 74/ 6/30 10:20	1.62	0.044	0.293	4.95	
16	123	74/ 7/ 4 19:11 74/ 7/ 4 19:26	0.25	0.230	0.920	2.05	0.12	74/ 7/ 4 19:10 74/ 7/ 4 20:30	1.34	0.076	0.330	27.21	
17	123	74/ 7/19 3:34 74/ 7/19 3:44	0.16	0.160	0.975	1.92	0.11	74/ 7/19 3:30 74/ 7/19 4:45	1.25	0.065	0.404	24.08	
18	123	74/ 9/ 2 22: 8 74/ 9/ 3 7:45	9.62	0.580	0.060	0.64	1.68	74/ 9/ 2 22: 0 74/ 9/ 3 9: 0	11.00	0.155	0.267	4.86	

*** TABLE X - 92. ***

```
***********************************
* SUMMARY OF EVENTS(CONTINUED) *
***********************************
*        CATCHMENT FILE : 62     *
***********************************************************
* BURLINGTON, ONTARIO.  MALVERN ROAD.            (ON 2 1) *
***********************************************************
*    STORM SEWERED AREA        CATCHMENT AREA   57.60 ACRES *
***********************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
19	123	74/ 9/12 7: 0 74/ 9/12 12:40	5.80	0.390	0.067	0.64	6.03	74/ 9/12 7:20 74/ 9/12 14:35	7.25	0.111	0.285	5.58	
20	123	74/ 9/28 0:48 74/ 9/28 5:30	4.70	0.300	0.064	0.64	3.37	74/ 9/28 1: 0 74/ 9/28 6: 0	5.00	0.075	0.249	5.30	
21	123	74/ 9/28 1: 3 74/ 9/28 1:29	0.43	0.100	0.231	0.32	0.37	74/ 9/28 0:59 74/ 9/28 2: 4	1.09	0.026	0.262	3.39	
22	123	74/ 9/28 19:13 74/ 9/28 20:37	1.40	0.600	0.429	1.92	0.10	74/ 9/28 19:10 74/ 9/28 21:40	2.50	0.173	0.289	15.11	
23	123	74/11/ 5 9:58 74/11/ 5 11:18	1.33	0.310	0.233	0.64	0.29	74/11/ 5 10: 4 74/11/ 5 12:30	2.43	0.087	0.279	6.65	
24	123	74/11/14 2:14 74/11/14 4: 8	1.90	0.120	0.063	0.09	0.55	74/11/14 2: 8 74/11/14 4:37	2.48	0.040	0.336	1.39	
25	123	74/11/20 4:55 74/11/20 5:30	0.59	0.030	0.051	0.04	1.12	74/11/20 5:17 74/11/20 6: 9	0.87	0.003	0.088	0.36	
26	123	74/11/20 9:38 74/11/20 11:34	1.93	0.200	0.103	1.28	0.18	74/11/20 9:43 74/11/20 11:20	1.62	0.057	0.283	7.10	
27	123	74/11/20 9:39 74/11/20 10:33	0.90	0.180	0.200	1.54	0.15	74/11/20 9:38 74/11/20 12: 0	2.37	0.058	0.320	7.10	
28	123	74/11/20 14:40 74/11/20 16:40	2.00	0.300	0.150	1.28	0.75	74/11/20 14:50 74/11/20 17:45	2.92	0.097	0.322	8.81	
29	123	74/12/ 7 0:31 74/12/ 7 1:36	1.08	0.120	0.111	0.15	1.16	74/12/ 7 0:42 74/12/ 7 1:54	1.20	0.031	0.258	2.17	

*** TABLE X - 92. ***

STATISTICAL SUMMARY

CATCHMENT FILE : 62

BURLINGTON, ONTARIO. MALVERN ROAD. (ON 2 1)

STORM SEWERED AREA CATCHMENT AREA 57.60 ACRES

	340 COD HI LEVEL MG/L	530 RESIDUE TOT NFLT MG/L	535 RESIDUE VOL NFLT MG/L	540 RESIDUE FIX NFLT MG/L	630 NO2&NO3 N-TOTAL MG/L	665 PHOS-P P-WET MG/L
MEAN................................	40.300	60.300	15.900	44.400	0.646	0.192
STANDARD DEVIATION..............	20.000	36.200	8.970	27.700	0.317	0.109
COEF. OF VARIATION..............	0.496	0.600	0.563	0.625	0.491	0.566
PARAMETER RANGE						
MIN....................	0.870	2.000	1.000	1.000	0.050	0.028
MAX....................	178.000	242.000	55.000	195.000	3.200	0.680
# OF EVENTS.....................	5	5	5	5	5	5
TOTAL FLOW VOLUME(INCH)..........	0.157	0.157	0.157	0.157	0.157	0.157
TOTAL MASS LOAD(LBS)............	82.500	123.000	32.600	90.800	1.320	0.394
CONCENTRATION(LBS/AC-IN)........	9.140	13.700	3.610	10.100	0.146	0.044

*** TABLE X - 93. ***

```
                                        ***************************************
                                        *         SUMMARY OF EVENTS           *
                                        ***************************************
                                        *         CATCHMENT FILE : 63         *
                           ***********************************************************
                           * TORONTO, ONTARIO.      EAST YORK.               (ON 3 1) *
                           ***********************************************************
                           * COMBINED SEWERED AREA         CATCHMENT AREA  383.00 ACRES *
                           ***********************************************************


                            RAINFALL                                                          FLOW
                            --------                                                          ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME   AVG    PEAK   BASIN DATE(START-END)     DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)   RAIN   RAIN   LAG   YR,MON,D,HR,MIN      (HRS)     (INCH)   COEFF.   FLOW  DAYS
                                                    IN/HR  IN/HR  HRS                                                   CFS
-----  ---   ---------------     -------   ------   ----   ----   ----- ---------------     -------    ------   ------   ----  ----

  1    123    76/ 3/27 14:29      1.42     0.160   0.113  1.19    0.32  76/ 3/27 14:48       1.43      0.069    0.430   28.30
              76/ 3/27 15:54                                            76/ 3/27 16:14

  2    123    76/ 3/31  6:37     11.33     0.910   0.080  0.30    3.20  76/ 3/31  8:49       2.55      0.107    0.117   21.10
              76/ 3/31 17:57                                            76/ 3/31 11:22

  3    123    76/ 4/22 22: 1      0.52     0.080   0.155  0.20    0.68  76/ 4/22 22:36       0.43      0.019    0.234   21.40
              76/ 4/22 22:32                                            76/ 4/22 23: 2

  4    123    76/ 4/24 22:22      5.37     0.310   0.058  0.15    9.37  76/ 4/24 23:52       7.97      0.284    0.916   20.10
              76/ 4/25  3:44                                            76/ 4/25  7:50

  5    123    76/ 5/ 6  6:44     23.35     0.540   0.023  0.15    3.25  76/ 5/ 6  9:59       4.35      0.141    0.261   19.10
              76/ 5/ 7  6: 5                                            76/ 5/ 6 14:20

  6    123    76/ 5/11 15:24      0.62     0.150   0.243  0.30    0.77  76/ 5/11 15:50       0.77      0.049    0.329   35.80
              76/ 5/11 16: 1                                            76/ 5/11 16:36

  7    123    76/ 6/ 1 10:54      0.75     0.100   0.133  0.30    0.42  76/ 6/ 1 11:19       0.55      0.024    0.245   22.20
              76/ 6/ 1 11:39                                            76/ 6/ 1 11:52

  8    123    76/ 6/28 22:50      0.38     0.060   0.157  0.28    0.53  76/ 6/28 23:22       0.22      0.009    0.147   19.00
              76/ 6/28 23:13                                            76/ 6/28 23:35

  9    123    76/ 6/30  6:50      2.38     0.250   0.105  0.64    2.02  76/ 6/30  8:31       1.10      0.067    0.267   36.90
              76/ 6/30  9:13                                            76/ 6/30  9:37

 10    123    76/ 6/30 10:36      1.38     0.100   0.072  0.28    0.80  76/ 6/30 11:24       0.43      0.016    0.165   20.00
              76/ 6/30 11:59                                            76/ 6/30 11:50

 11    123    76/ 7/ 1  7:53      0.90     0.160   0.178  0.32    0.91  76/ 7/ 1  8:34       0.66      0.038    0.237   30.00
              76/ 7/ 1  8:47                                            76/ 7/ 1  9:14

 12    123    76/ 7/ 1 16:58      0.15     0.220   1.482  3.84    0.29  76/ 7/ 1 17: 9       0.55      0.067    0.305   94.00
              76/ 7/ 1 17: 7                                            76/ 7/ 1 17:42

 13    123    76/ 7/ 2 11:22      1.02     0.120   0.118  0.32    0.92  76/ 7/ 2 11:50       0.88      0.041    0.343   22.00
              76/ 7/ 2 12:23                                            76/ 7/ 2 12:43

 14    123    76/ 7/ 7 18:11      1.15     0.230   0.200  0.64    0.98  76/ 7/ 7 18:56       0.90      0.077    0.333   46.70
              76/ 7/ 7 19:20                                            76/ 7/ 7 19:50

 15    123    76/ 7/11  0:30      1.11     0.120   0.108  0.20    1.03  76/ 7/11  1:25       0.57      0.023    0.194   18.80
              76/ 7/11  1:37                                            76/ 7/11  1:59

 16    123    76/ 7/17  6:30     24.43     0.070   0.003  0.64  -23.62  76/ 7/16  6:53       0.33      0.013    0.192   21.10
              76/ 7/18  6:56                                            76/ 7/16  7:13

 17    123    76/ 7/20 18:56      3.54     0.530   0.150  0.64    2.30  76/ 7/20 19:36       2.75      0.251    0.473   60.40
              76/ 7/20 22:28                                            76/ 7/20 22:21

 18    123    76/ 7/29  7:27      3.38     0.460   0.136  1.28    2.38  76/ 7/29  8:30       1.33      0.090    0.195   54.60
              76/ 7/29 10:50                                            76/ 7/29  9:50


                                        *** TABLE X - 94. ***
                                        ***********************************
                                        * SUMMARY OF EVENTS(CONTINUED) *
                                        ***********************************
                                        *        CATCHMENT FILE : 63   *
                              ***************************************************************
                              * TORONTO, ONTARIO.     EAST YORK.                (ON 3 1) *
                              ***************************************************************
                              * COMBINED SEWERED AREA         CATCHMENT AREA  383.00 ACRES *
                              ***************************************************************


                               RAINFALL                                                 FLOW
                               --------                                                 ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)    DURATION   VOLUME  RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)  COEFF.   FLOW  DAYS
                                                   IN/HR IN/HR   HRS                                                  CFS
-----  ----  ---------------     --------  ------  ----  ----    ----- ---------------    --------   ------  ------   ----  ----


 19    123     76/ 7/31  8:52     2.68     0.380  0.142  1.28    0.47  76/ 7/31  9:20     2.55      0.145   0.381   37.70
               76/ 7/31 11:33                                          76/ 7/31 11:53

 20    123     76/ 8/13 16:11     0.17     0.220  1.310  4.10    0.32  76/ 8/13 16:24     0.55      0.054   0.245   92.00
               76/ 8/13 16:21                                          76/ 8/13 16:57

 21    123     76/ 8/28 16: 7     1.67     0.970  0.582  4.48    0.35  76/ 8/28 16:22     0.77      0.033   0.034   96.00
               76/ 8/28 17:47                                          76/ 8/28 17: 8

 22    123     76/ 9/ 1  0:55     1.17     0.210  0.180  1.28    0.73  76/ 9/ 1  1:39     0.88      0.060   0.284   59.00
               76/ 9/ 1  2: 5                                          76/ 9/ 1  2:32
```

*** TABLE X - 94. ***

```
                    ******************************
                    *     STATISTICAL SUMMARY    *
                    ******************************
                    *     CATCHMENT FILE : 63    *
*************************************************************
* TORONTO, ONTARIO.     EAST YORK.                 (ON 3 1) *
*************************************************************
* COMBINED SEWERED AREA         CATCHMENT AREA  383.00 ACRES *
*************************************************************
```

	95 CNDUCTVY AT 25C MICROMHO	310 BOD 5 DAY MG/L	340 COD HI LEVEL MG/L	500 RESIDUE TOTAL MG/L	505 RESIDUE TOT VOL MG/L	510 RESIDUE TOTAL FI X MG/L	515 RESIDUE DISS-105 C MG/L	520 RESIDUE VOL FLT MG/L
MEAN..............................	249.000	35.500	157.000	665.000	561.000	103.000	538.000	37.800
STANDARD DEVIATION..............	75.200	18.200	76.900	1720.000	1700.000	49.100	1670.000	15.500
COEF. OF VARIATION..............	0.302	0.512	0.491	2.587	3.037	0.475	3.105	0.411
PARAMETER RANGE								
MIN..................	84.000	0.100	35.000	0.020	2.000	0.100	54.000	0.600
MAX..................	2750.000	280.000	1090.000	20500.000	20300.000	1190.000	20100.000	190.000
# OF EVENTS......................	18	22	21	19	19	19	19	19
TOTAL FLOW VOLUME(INCH).........	1.547	1.676	1.650	1.382	1.382	1.382	1.382	1.382
TOTAL MASS LOAD(LBS)............	**********	5170.000	22400.000	79700.000	67300.000	12400.000	64600.000	4540.000
CONCENTRATION(LBS/AC-IN)........	**********	8.050	35.500	151.000	127.000	23.400	122.000	8.570

	525 RESIDUE FIX FLT MG/L	530 RESIDUE TOT NFLT MG/L	535 RESIDUE VOL NFLT MG/L	540 RESIDUE FIX NFLT MG/L	608 NH3-N DISS MG/L	615 NO2-N TOTAL MG/L	620 NO3-N TOTAL MG/L	625 TOT KJEL N MG/L
MEAN..............................	500.000	134.000	65.500	62.400	1.650	0.078	0.755	6.250
STANDARD DEVIATION..............	1670.000	110.000	39.400	64.800	1.050	0.054	0.505	2.280
COEF. OF VARIATION..............	3.340	0.818	0.601	1.039	0.638	0.688	0.669	0.365
PARAMETER RANGE								
MIN..................	0.200	6.000	5.000	1.000	0.100	0.010	0.100	1.400
MAX..................	20100.000	2120.000	1000.000	1120.000	11.000	85.000	20.000	26.000
# OF EVENTS......................	19	22	19	19	22	22	22	22
TOTAL FLOW VOLUME(INCH).........	1.382	1.673	1.382	1.345	1.671	1.673	1.673	1.674
TOTAL MASS LOAD(LBS)............	60000.000	19500.000	7860.000	7280.000	239.000	11.300	110.000	908.000
CONCENTRATION(LBS/AC-IN)........	113.000	30.400	14.900	14.100	0.373	0.018	0.171	1.420

	665 PHOS-P P-WET MG/L	672 PHOS-DIS HYDRO MG/L P	940 CHLORIDE CL MG/L	945 SULFATE SO4 MG/L	1051 LEAD PB.TOT UG/L	32730 PHENOLS TOTAL UG/L
MEAN..............................	1.500	0.290	35.300	17.600	237.000	5.290
STANDARD DEVIATION..............	0.829	0.160	16.200	4.470	241.000	5.350
COEF. OF VARIATION..............	0.554	0.552	0.460	0.254	1.014	1.011
PARAMETER RANGE						
MIN..................	0.280	0.020	9.000	7.000	10.000	0.200
MAX..................	22.000	2.600	138.000	200.000	4800.000	150.000
# OF EVENTS......................	22	22	22	22	22	22
TOTAL FLOW VOLUME(INCH).........	1.674	1.671	1.661	1.674	1.530	1.661
TOTAL MASS LOAD(LBS)............	217.000	42.100	5080.000	2560.000	31.500	762.000
CONCENTRATION(LBS/AC-IN)........	0.339	0.066	7.990	3.990	0.054	1.200

*** TABLE X - 95. ***

* SUMMARY OF EVENTS *

* CATCHMENT FILE : 64 *

* TORONTO, ONTARIO. BRUCEWOOD, NORTH YORK. (ON 3 2) *

* STORM SEWERED AREA CATCHMENT AREA 48.23 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	74/ 5/ 3 15:41 74/ 5/ 3 17:11	1.50	0.030	0.020	0.60	0.57	74/ 5/ 3 15:55 74/ 5/ 3 17:20	1.42	0.003	0.106	0.27	
2	123	74/ 5/ 5 18:51 74/ 5/ 5 21:31	2.67	0.340	0.127	2.41	2.37	74/ 5/ 5 18:53 74/ 5/ 5 22:10	3.28	0.122	0.359	9.81	
3	123	74/ 5/ 9 1:26 74/ 5/ 9 10:26	9.00	0.410	0.046	1.20	2.53	74/ 5/ 9 1:26 74/ 5/ 9 10:35	9.15	0.121	0.296	3.72	
4	123	74/ 5/11 21:11 74/ 5/12 13:41	16.50	1.270	0.077	4.82	9.00	74/ 5/11 21:11 74/ 5/12 13:50	16.65	0.561	0.442	25.94	
5	123	74/ 5/12 19:56 74/ 5/12 20: 1	0.08	0.040	0.479	1.20	0.20	74/ 5/12 19:56 74/ 5/12 20:50	0.90	0.023	0.577	3.97	
6	123	74/ 5/14 7:46 74/ 5/14 9:41	1.92	0.260	0.136	3.01	1.97	74/ 5/14 8: 0 74/ 5/14 10:15	2.25	0.119	0.457	11.17	
7	123	74/ 5/16 15:46 74/ 5/16 17:26	1.67	0.160	0.096	1.20	1.05	74/ 5/16 15:48 74/ 5/16 18:15	2.45	0.065	0.407	4.58	
8	123	74/ 5/16 20:16 74/ 5/16 22:26	2.17	0.760	0.351	7.83	1.53	74/ 5/16 20:16 74/ 5/16 23:35	3.32	0.439	0.578	29.68	
9	123	74/ 5/17 13: 1 74/ 5/17 15: 6	2.08	0.230	0.110	3.01	0.28	74/ 5/17 13: 1 74/ 5/17 16:20	3.32	0.105	0.457	7.49	
10	123	74/ 6/17 0: 1 74/ 6/17 0: 1	0.02	0.020	1.200	0.00	0.17	74/ 6/17 0: 8 74/ 6/17 0:24	0.27	0.007	0.356	3.21	
11	123	74/ 6/17 12: 1 74/ 6/17 13:18	1.28	0.160	0.125	0.60	0.90	74/ 6/17 12:20 74/ 6/17 13:36	1.27	0.021	0.132	1.93	
12	123	74/ 6/17 18: 1 74/ 6/17 18:19	0.30	0.150	0.500	1.81	0.20	74/ 6/17 18: 2 74/ 6/17 18:31	0.48	0.050	0.334	18.09	
13	123	74/ 6/19 8:46 74/ 6/19 12:48	4.03	0.520	0.129	0.60	4.22	74/ 6/19 9: 7 74/ 6/19 13:17	4.17	0.122	0.235	7.26	
14	123	74/ 6/19 14:56 74/ 6/19 16: 0	1.07	0.140	0.131	0.60	1.03	74/ 6/19 15:41 74/ 6/19 16:23	0.70	0.020	0.141	2.38	
15	123	74/ 6/25 0: 1 74/ 6/25 0:59	0.96	0.490	0.508	3.20	0.20	74/ 6/25 0: 5 74/ 6/25 1:13	1.13	0.124	0.253	15.01	
16	123	74/ 6/26 0: 1 74/ 6/26 0: 5	0.07	0.090	1.355	1.54	0.20	74/ 6/26 0: 3 74/ 6/26 0:25	0.37	0.011	0.122	6.70	
17	123	74/ 6/27 0: 1 74/ 6/27 0: 6	0.08	0.090	1.097	1.28	0.18	74/ 6/27 0: 5 74/ 6/27 1: 0	0.92	0.064	0.716	14.19	
18	123	74/ 7/ 2 0: 1 74/ 7/ 2 3:33	3.53	0.250	0.071	0.64	2.88	74/ 7/ 2 0:10 74/ 7/ 2 4:16	4.10	0.180	0.721	4.72	

*** TABLE X - 96. ***

```
*********************************
* SUMMARY OF EVENTS(CONTINUED) *
*********************************
*        CATCHMENT FILE : 64    *
*****************************************************
* TORONTO, ONTARIO. BRUCEWOOD, NORTH YORK.       (ON 3 2) *
*****************************************************
*    STORM SEWERED AREA          CATCHMENT AREA   48.23 ACRES *
*****************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
19	123	74/ 7/ 3 0: 1 74/ 7/ 3 1: 2	1.02	0.140	0.138	0.64	0.71	74/ 7/ 3 0:10 74/ 7/ 3 1:27	1.29	0.087	0.622	7.74	
20	123	74/10/23 0: 1 74/10/23 1: 3	1.03	0.100	0.097	0.64	0.65	74/10/23 0:11 74/10/23 1:40	1.48	0.018	0.182	1.50	
21	123	74/11/12 1:27 74/11/12 4:34	3.12	0.130	0.042	0.64	4.96	74/11/12 2:34 74/11/12 9:46	7.20	0.030	0.229	0.35	
22	123	74/11/20 9:25 74/11/20 10:41	1.27	0.310	0.245	1.28	0.87	74/11/20 9:42 74/11/20 11:54	2.20	0.096	0.311	9.46	
23	123	74/11/24 12:46 74/11/24 14:59	2.21	0.150	0.068	0.64	2.33	74/11/24 13: 9 74/11/24 15:40	2.52	0.043	0.288	1.29	
24	123	74/12/ 2 12:19 74/12/ 3 3:39	15.33	0.360	0.023	0.24	3.66	74/12/ 2 12:19 74/12/ 3 4:54	16.58	0.050	0.140	0.43	
25	123	74/12/ 8 0: 5 74/12/ 8 13: 0	12.92	0.190	0.015	0.24	3.83	74/12/ 8 0: 5 74/12/ 8 14:45	14.67	0.054	0.283	1.32	
26	123	75/ 1/ 9 5: 2 75/ 1/ 9 6:37	1.58	0.060	0.038	0.12	0.83	75/ 1/ 9 5:17 75/ 1/ 9 6:42	1.42	0.009	0.158	0.48	
27	123	75/ 2/17 13:33 75/ 2/17 19:53	6.33	0.300	0.047	0.36	5.17	75/ 2/17 14: 3 75/ 2/17 21:48	7.75	0.032	0.106	0.45	
28	123	75/ 3/12 9:39 75/ 3/12 15: 4	5.42	0.080	0.015	0.12	4.75	75/ 3/12 10: 4 75/ 3/12 16:49	6.75	0.035	0.433	1.04	

*** TABLE X - 96. ***

STATISTICAL SUMMARY

CATCHMENT FILE : 64

TORONTO, ONTARIO. BRUCEWOOD, NORTH YORK. (ON 3 2)

STORM SEWERED AREA CATCHMENT AREA 48.23 ACRES

	310 BOD 5 DAY MG/L	340 COD HI LEVEL MG/L	500 RESIDUE TOTAL MG/L	530 RESIDUE TOT NFLT MG/L	610 NH3-N TOTAL MG/L	620 NO3-N TOTAL MG/L	625 TOT KJEL N MG/L	665 PHOS-P P-WET MG/L
MEAN	10.400	49.200	500.000	176.000	0.302	1.090	4.320	0.335
STANDARD DEVIATION	4.910	18.200	123.000	108.000	0.183	0.259	4.600	0.137
COEF. OF VARIATION	0.471	0.369	0.247	0.615	0.606	0.238	1.065	0.408
PARAMETER RANGE								
MIN	1.000	20.000	300.000	10.000	0.100	0.200	0.400	0.040
MAX	27.900	160.000	1200.000	500.000	1.600	2.900	19.000	1.100
# OF EVENTS	8	6	2	8	7	7	8	8
TOTAL FLOW VOLUME(INCH)	0.160	0.152	0.043	0.160	0.116	0.116	0.157	0.138
TOTAL MASS LOAD(LBS)	18.200	81.800	234.000	308.000	0.382	1.380	7.430	0.505
CONCENTRATION(LBS/AC-IN)	2.360	11.200	113.000	40.000	0.069	0.247	0.980	0.076

	666 PHOS-DIS MG/L P	940 CHLORIDE CL MG/L	1051 LEAD PB.TOT UG/L	31501 TOT COLI MFIMENDO LN/100ML	31616 FEC COLI MFM-FCBR LN/100ML	32730 PHENOLS TOTAL UG/L
MEAN	0.079	196.000	629.000	8.640	6.840	13.500
STANDARD DEVIATION	0.078	312.000	429.000	7.670	6.260	7.640
COEF. OF VARIATION	0.994	1.589	0.682	0.378	0.564	0.564
PARAMETER RANGE						
MIN	0.020	0.060	30.000	5.990	3.000	1.000
MAX	0.680	1540.000	1300.000	9.130	7.310	44.000
# OF EVENTS	7	8	6	3	3	6
TOTAL FLOW VOLUME(INCH)	0.116	0.157	0.116	0.087	0.087	0.114
TOTAL MASS LOAD(LBS)	0.099	337.000	0.796	23.900	22.100	16.800
CONCENTRATION(LBS/AC-IN)	0.018	44.500	0.143	22.500	20.700	3.070

*** TABLE X - 97. ***

```
                                        ******************************
                                        *      SUMMARY OF EVENTS     *
                                        ******************************
                                        *      CATCHMENT FILE : 65   *
                          ******************************************************
                          * PORTLAND, OREGON.  EASTMORELAND.           (OR 1 1) *
                          ******************************************************
                          * COMBINED SEWERED AREA      CATCHMENT AREA  75.00 ACRES *
                          ******************************************************


                               RAINFALL                                          FLOW
                               --------                                          ----

EVENT RAIN  DATE(START-END)     DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)  DURATION   VOLUME  RUNOFF  PEAK DRY
      GAGE  YR,MON,D,HR,MIN      (HRS)   (INCH) RAIN   RAIN  LAG   YR,MON,D,HR,MIN  (HRS)      (INCH)  COEFF.  FLOW DAYS
                                                IN/HR  IN/HR HRS                                               CFS
----- ----  ---------------     -------- ------ -----  ----  ----- ---------------  --------   ------  ------  ---- ----


  1   123     75/ 3/17 18: 9    50.73    1.170 0.023  0.30  48.08 75/ 3/17 18:26    48.63     0.540   0.461   9.02
              75/ 3/19 20:53                                      75/ 3/19 19: 4

  2   123     75/ 3/20  6:10    13.76    0.120 0.009  0.11   0.58 75/ 3/20  6: 3     2.79     0.046   0.384   2.45
              75/ 3/20 19:56                                      75/ 3/20  8:50

  3   123     75/ 3/21  2:30     5.54    0.200 0.036  0.10   4.83 75/ 3/21  2:21     5.65     0.071   0.353   1.99
              75/ 3/21  8: 2                                      75/ 3/21  8: 0

  4   123     75/ 3/22  7:56     1.89    0.050 0.026  0.10   1.86 75/ 3/22  9: 4     0.74     0.010   0.190   1.89
              75/ 3/22  9:49                                      75/ 3/22  9:48

  5   123     75/ 3/23  3:39    17.64    0.300 0.017  0.10   5.88 75/ 3/23  4:32    14.32     0.129   0.431   2.35
              75/ 3/23 21:18                                      75/ 3/23 18:51

  6   123     75/ 4/ 2  7: 1     6.45    0.130 0.020  0.30   0.30 75/ 4/ 2  7:10     1.18     0.026   0.197   3.76
              75/ 4/ 2 13:28                                      75/ 4/ 2  8:21

  7   123     75/ 4/ 3  9: 9    12.59    0.180 0.014  0.40   8.25 75/ 4/ 3 11:13     7.25     0.068   0.377   4.39
              75/ 4/ 3 21:44                                      75/ 4/ 3 18:28

  8   123     75/ 4/15 21:50     5.68    0.310 0.055  0.14   4.07 75/ 4/15 22:13     5.35     0.094   0.302   4.53
              75/ 4/16  3:31                                      75/ 4/16  3:34

  9   123     75/ 4/22 16:46    44.00    0.580 0.013  0.30  36.83 75/ 4/22 23:22    31.69     0.240   0.414   3.45
              75/ 4/24 12:46                                      75/ 4/24  7: 3

 10   123     75/ 4/24 23:39     7.40    0.170 0.023  0.17   7.17 75/ 4/24 19:48    11.25     0.086   0.508   3.73
              75/ 4/25  7: 3                                      75/ 4/25  7: 4

 11   123     75/ 5/ 2  4:35    34.13    1.140 0.033  2.93  18.57 75/ 5/ 2  4:57    33.84     0.423   0.371  21.17
              75/ 5/ 3 14:42                                      75/ 5/ 3 14:48

 12   123     75/ 5/ 4 16: 6    37.55    0.100 0.003  0.30   0.20 75/ 5/ 4 16: 8    37.52     0.285   2.848   7.11
              75/ 5/ 6  5:38                                      75/ 5/ 6  5:39

 13   123     75/ 5/10 16:22     8.54    0.170 0.020  0.60   1.23 75/ 5/10 16:35     8.15     0.080   0.469   3.41
              75/ 5/11  0:54                                      75/ 5/11  0:44

 14   123     75/ 5/19 16:41     0.33    0.060 0.180  0.47   0.20 75/ 5/19 16:47     0.30     0.010   0.166   4.51
              75/ 5/19 17: 1                                      75/ 5/19 17: 5

 15   123     75/ 5/22 19:16     2.00    0.080 0.040  0.09   0.72 75/ 5/22 19:31     1.82     0.024   0.301   2.18
              75/ 5/22 21:16                                      75/ 5/22 21:20

 16   123     75/ 6/18 22: 7    10.18    0.070 0.007  0.08   9.97 75/ 6/18 22:18    10.58     0.042   0.603   0.32
              75/ 6/19  8:17                                      75/ 6/19  8:53

 17   123     75/ 6/23 11:37    25.43    0.430 0.017  0.15  20.88 75/ 6/23 11:48    25.33     0.204   0.475   2.82
              75/ 6/24 13: 3                                      75/ 6/24 13: 8

 18   123     75/ 6/25  9:49     4.60    0.110 0.024  0.64   4.34 75/ 6/25 10:27     9.08     0.204   1.853   4.57
              75/ 6/25 14:25                                      75/ 6/25 19:32
```

*** TABLE X - 98. ***

```
                                   ***********************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ***********************************
                                   *        CATCHMENT FILE : 65     *
                         ******************************************************
                         * PORTLAND, OREGON.   EASTMORELAND.           (OR 1 1) *
                         ******************************************************
                         * COMBINED SEWERED AREA       CATCHMENT AREA   75.00 ACRES *
                         ******************************************************


                           RAINFALL                                            FLOW
                           --------                                            ----

EVENT RAIN DATE(START-END)    DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN     (HRS)   (INCH)  RAIN  RAIN  LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                               IN/HR IN/HR HRS                                             CFS
----- ---- ---------------- -------- ------  ----  ----  ----- ---------------   --------  ------  ------  ----  ----


 19   123   75/ 6/26  4:58  14.18    0.300  0.021 0.43  12.96 75/ 6/26  5:53     17.73     0.173   0.575   4.71
            75/ 6/26 19: 9                                    75/ 6/26 23:37

 20   123   75/ 6/27 11:58  14.35    0.270  0.019 5.12   3.21 75/ 6/27 11:53     14.20     0.109   0.403  10.46
            75/ 6/28  2:19                                    75/ 6/28  2: 5

 21   123   75/ 6/30 18:18   1.53    0.210  0.137 0.37   1.56 75/ 6/30 18:31      5.23     0.077   0.367   6.49
            75/ 6/30 19:50                                    75/ 6/30 23:45

 22   123   75/ 7/ 1  1:57   3.14    0.240  0.077 0.01   2.31 75/ 7/ 1  0: 0      5.27     0.021   0.089   0.34
            75/ 7/ 1  5: 6                                    75/ 7/ 1  5:16

 23   123   75/ 7/28 13:34   4.46    0.250  0.056 0.43   2.90 75/ 7/28 13:56      3.72     0.062   0.247   2.40
            75/ 7/28 18: 1                                    75/ 7/28 17:40

 24   123   75/ 8/17  9:49  29.92    0.390  0.013 0.64  30.11 75/ 8/17 10: 4     30.16     0.243   0.623   4.17
            75/ 8/18 15:44                                    75/ 8/18 16:13

 25   123   75/ 8/22 16:38   5.70    0.810  0.142 0.64   3.56 75/ 8/22 17:10      5.05     0.242   0.298   9.95
            75/ 8/22 22:20                                    75/ 8/22 22:13

 26   123   75/ 8/27 14:26  22.19    0.510  0.023 2.56   4.06 75/ 8/27 14:38     22.23     0.236   0.463  33.06
            75/ 8/28 12:37                                    75/ 8/28 12:52

 27   123   75/ 8/29  4:40  11.04    0.160  0.014 0.17   1.57 75/ 8/29  5: 9     10.33     0.090   0.563   3.73
            75/ 8/29 15:42                                    75/ 8/29 15:29

 28   123   75/ 8/30  4:10  12.28    0.620  0.050 2.56   1.37 75/ 8/30  4:46      1.36     0.024   0.038   2.03
            75/ 8/30 16:26                                    75/ 8/30  6: 8
```

*** TABLE X - 98. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 66

LANCASTER, PENNSYLVANIA. STEVENS AVENUE. (PA 1 1)

COMBINED SEWERED AREA CATCHMENT AREA 134.00 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	73/ 9/14 6: 5 73/ 9/14 20:55	14.83	2.496	0.168	0.46	12.54	73/ 9/14 7:30 73/ 9/14 20:58	13.47	0.492	0.197	75.66	
2	129	73/10/29 7:20 73/10/29 12:15	4.92	1.538	0.313	1.56	3.45	73/10/29 8: 8 73/10/29 11:11	3.05	0.894	0.582	384.34	
3	129	73/11/24 11:10 73/11/24 13:50	2.67	0.135	0.051	0.24	2.07	73/11/24 13:14 73/11/24 14:51	1.63	0.058	0.428	12.48	
4	129	73/11/28 15: 0 73/11/28 15:45	0.75	0.228	0.305	0.54	0.69	73/11/28 15:11 73/11/28 16:53	1.70	0.146	0.640	84.95	
5	129	73/12/13 15:30 73/12/13 23:15	7.75	0.182	0.023	0.18	2.40	73/12/13 16:12 73/12/13 18:21	2.15	0.127	0.699	27.25	
6	129	74/ 1/21 9:10 74/ 1/21 13:15	4.08	0.808	0.198	1.08	2.33	74/ 1/21 10: 0 74/ 1/21 13:54	3.90	0.883	1.092	217.67	

*** TABLE X - 99. ***

```
                                                 *****************************
                                                 *    STATISTICAL SUMMARY    *
                                                 *****************************
                                                 *    CATCHMENT FILE : 66    *
                                      *****************************************************
                                      * LANCASTER, PENNSYLVANIA.  STEVENS AVENUE.   (PA 1 1) *
                                      *****************************************************
                                      * COMBINED SEWERED AREA     CATCHMENT AREA 134.00 ACRES *
                                      *****************************************************

                                       11          94         299         310         324         340         400         500
                                    WATER    CNDUCTVY          DO         BOD         BOD         COD          PH     RESIDUE
                                     TEMP       FIELD       PROBE       5 DAY      20 DAY    HI LEVEL                   TOTAL
                                     FAHN    MICROMHO        MG/L        MG/L        MG/L        MG/L          SU        MG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN..........................     55.800     154.000       9.160      55.100      81.700     207.000       6.990     434.000
STANDARD DEVIATION............      8.840      80.900       0.960      49.800       0.140     120.000       0.122     172.000
COEF. OF VARIATION............      0.158       0.524       0.105       0.903       0.002       0.582       0.017       0.397
PARAMETER RANGE
          MIN.................     34.000      20.000       1.100      12.000      38.000      40.000       5.500     112.000
          MAX.................     76.000     650.000      12.100     587.000     215.000    1090.000       8.000    1510.000
# OF EVENTS...................          6           6           6           5           1           5           6           5
TOTAL FLOW VOLUME(INCH).......      2.553       2.553       2.535       1.927       0.753       1.927       2.553       1.903
TOTAL MASS LOAD(LBS)..........  **********  **********    705.000    3230.000    1870.000   12100.000  **********   25100.000
CONCENTRATION(LBS/AC-IN)......  **********  **********      2.080      12.500      18.500      46.800  **********      98.400

                                      515         530         535         540         605         610         615         620
                                  RESIDUE     RESIDUE     RESIDUE     RESIDUE       ORG N       NH3-N       NO2-N       NO3-N
                                 DISS-105    TOT NFLT    VOL NFLT    FIX NFLT           N       TOTAL       TOTAL       TOTAL
                                   C MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN..........................    162.000     271.000     119.000     152.000       2.020       3.370       0.098       5.860
STANDARD DEVIATION............     41.400     171.000      66.800     114.000       1.350       1.660       0.011       1.420
COEF. OF VARIATION............      0.256       0.632       0.563       0.747       0.669       0.491       0.111       0.242
PARAMETER RANGE
          MIN.................     36.000      34.000       1.000       1.000       0.100       1.000       0.050       0.500
          MAX.................    598.000    1170.000     778.000     548.000       9.900      14.700       0.200      17.000
# OF EVENTS...................          5           5           5           5           5           5           3           5
TOTAL FLOW VOLUME(INCH).......      1.903       1.907       1.907       1.907       1.922       1.927       1.749       1.927
TOTAL MASS LOAD(LBS)..........   9360.000   15700.000    6870.000    8830.000     118.000     197.000       5.180     343.000
CONCENTRATION(LBS/AC-IN)......     36.700      61.400      26.900      34.500       0.458       0.764       0.022       1.330

                                      665         669         940        1027        1034        1042        1051        1092
                                   PHOS-P      PHOS-T    CHLORIDE     CADMIUM    CHROMIUM      COPPER        LEAD        ZINC
                                    P-WET       HYDRO          CL      CD.TOT      CR.TOT      CU.TOT      PB.TOT      ZN.TOT
                                     MG/L      MG/L P        MG/L        UG/L        UG/L        UG/L        UG/L        UG/L
                                 --------    --------    --------    --------    --------    --------    --------    --------
MEAN..........................     20.500       0.884       9.630      29.200    2230.000     156.000    7530.000     357.000
STANDARD DEVIATION............      6.170       0.317       6.670       6.370     775.000      35.200    7280.000     197.000
COEF. OF VARIATION............      0.302       0.359       0.693       0.218       0.348       0.225       0.967       0.553
PARAMETER RANGE
          MIN.................      7.200       0.060       2.500      10.000     100.000      90.000     100.000     100.000
          MAX.................     78.000       5.100      54.200     180.000   18000.000     550.000   33000.000    1350.000
# OF EVENTS...................          5           5           5           3           3           5           3           5
TOTAL FLOW VOLUME(INCH).......      1.886       1.886       1.927       1.527       1.527       1.705       1.527       1.705
TOTAL MASS LOAD(LBS)..........   1170.000      50.600     563.000       1.350     103.000       8.100     349.000      18.500
CONCENTRATION(LBS/AC-IN)......      4.640       0.200       2.180       0.007       0.505       0.035       1.710       0.081
```

*** TABLE X -100. ***

```
                              ********************************
                              *      SUMMARY OF EVENTS       *
                              ********************************
                              *      CATCHMENT FILE : 67     *
                              ********************************
                 **********************************************************
                 * PHILADELPHIA, PENNSYLVANIA.  VINGOHOCKING.     (PA 2 1) *
                 **********************************************************
                 * COMBINED SEVERED AREA       CATCHMENT AREA 5326.00 ACRES *
                 **********************************************************


                         RAINFALL                                        FLOW
                         --------                                        ----

EVENT RAIN DATE(START-END)   DURATION VOLUME AVG   PEAK   BASIN DATE(START-END)  DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH) RAIN  RAIN   LAG   YR,MON,D,HR,MIN  (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                             IN/HR IN/HR  HRS                                              CFS
----  ---- --------------- -------- ------ ----- -----  ----- ---------------  --------  ------  ------  ----  ----


  1   128   64/ 4/27 22:50   8.08   1.020 0.126 0.48    6.00 64/ 4/28  0:50    9.50     0.267   0.262 470.00
            64/ 4/28  6:55                                   64/ 4/28 10:20

  2   128   64/ 4/29  5: 5   7.58   1.000 0.132 0.96    8.67 64/ 4/29  7: 0    9.50     0.370   0.370 860.00
            64/ 4/29 12:40                                   64/ 4/29 16:30

  3   129   64/ 9/28 22: 0   5.75   1.201 0.209 1.44    5.75 64/ 9/28 22:30    7.00     0.336   0.280 985.00
            64/ 9/29  3:45                                   64/ 9/29  5:30

      128   64/ 9/28 21:55   6.50   1.398 0.215 1.68    5.84                                    0.241
            64/ 9/29  4:25

      126   64/ 9/28 21:50   6.67   1.344 0.202 1.32    5.92                                    0.250
            64/ 9/29  4:30

      125   64/ 9/28 21:45   6.83   1.369 0.200 1.32    6.00                                    0.246
            64/ 9/29  4:35

  4   129   64/11/25 14:40   7.42   1.470 0.198 1.44    7.34 64/11/25 15:40    7.34     0.303   0.206 960.00
            64/11/25 22: 5                                   64/11/25 23: 0

      128   64/11/25 14:55   7.34   1.461 0.199 1.80    7.09                                    0.207
            64/11/25 22:15

      127   64/11/25 14:45   7.50   1.236 0.165 0.96    7.25                                    0.245
            64/11/25 22:15

      126   64/11/25 14:45   7.25   1.355 0.187 1.80    7.25                                    0.224
            64/11/25 22: 0

  5   128   65/ 7/11  0:45  14.41   2.590 0.180 1.92    2.00 65/ 7/11  2:30   14.00     0.606   0.234 960.00
            65/ 7/11 15:10                                   65/ 7/11 16:30

      126   65/ 7/11  1: 5  14.33   2.263 0.158 1.92    1.67                                    0.268
            65/ 7/11 15:25

      125   65/ 7/11  0:45  15.66   2.124 0.136 0.96    2.00                                    0.285
            65/ 7/11 16:25

  6   129   65/ 8/ 4 21:15   9.16   1.511 0.165 1.44    4.18 65/ 8/ 4 22:56    9.00     0.312   0.207 789.00
            65/ 8/ 5  6:25                                   65/ 8/ 5  7:56

      128   65/ 8/ 4 22:15   8.41   0.849 0.101 0.60    3.18                                    0.368
            65/ 8/ 5  6:40

      127   65/ 8/ 4 23:20   7.00   0.499 0.071 0.48    2.10                                    0.626
            65/ 8/ 5  6:20

      126   65/ 8/ 4 23:25   3.92   1.096 0.280 3.60    2.02                                    0.285
            65/ 8/ 5  3:20

      125   65/ 8/ 4 21:10   8.84   1.389 0.157 1.08    4.27                                    0.225
            65/ 8/ 5  6: 0
```

*** TABLE X -101. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 67 *

* PHILADELPHIA, PENNSYLVANIA. WINGOHOCKING. (PA 2 1) *

* COMBINED SEWERED AREA CATCHMENT AREA 5326.00 ACRES *

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
7	128	65/ 8/ 9 17:15 65/ 8/ 9 22:55	5.66	2.068	0.365	3.24	1.78	65/ 8/ 9 17:42 65/ 8/ 9 23:22	5.66	0.339	0.164	985.00	
	127	65/ 8/ 9 17:25 65/ 8/ 9 22: 5	4.67	1.811	0.388	4.56	1.62				0.187		
	126	65/ 8/ 9 17:10 65/ 8/ 9 22:10	5.00	2.546	0.509	6.00	1.87				0.133		
	125	65/ 8/ 9 17:35 65/ 8/ 9 22: 2	4.45	0.585	0.131	1.68	1.45				0.579		
8	128	65/ 8/22 0:15 65/ 8/22 9:15	9.00	1.272	0.141	0.84	4.50	65/ 8/22 3:30 65/ 8/22 12:45	9.25	0.308	0.242	800.00	
	127	65/ 8/21 23:55 65/ 8/22 9:15	9.34	1.049	0.112	0.72	4.84				0.294		
	126	65/ 8/22 0: 5 65/ 8/22 9:15	9.17	1.310	0.143	0.60	4.67				0.235		
	125	65/ 8/22 0: 5 65/ 8/22 7:55	7.83	1.020	0.130	0.60	4.67				0.302		
9	129	65/ 9/24 17:50 65/ 9/24 22:55	5.08	1.184	0.233	3.12	0.50	65/ 9/24 18: 5 65/ 9/24 22:20	4.25	0.203	0.171	960.00	
	128	65/ 9/24 17:55 65/ 9/24 23:20	5.42	1.430	0.264	2.40	0.42				0.142		
	126	65/ 9/24 18: 0 65/ 9/24 22:25	4.41	1.129	0.256	2.28	0.33				0.180		
	125	65/ 9/24 18: 5 65/ 9/24 23: 0	4.92	0.936	0.190	2.28	0.25				0.217		
10	129	65/10/ 7 14:35 65/10/ 7 22:40	8.08	1.311	0.162	1.20	7.60	65/10/ 7 19:26 65/10/ 7 22:56	3.50	0.253	0.193	880.00	
	128	65/10/ 7 14:40 65/10/ 7 20:40	6.00	0.867	0.144	0.96	7.52				0.292		
	127	65/10/ 7 14:30 65/10/ 7 22:35	8.08	1.029	0.127	0.84	7.68				0.246		
	126	65/10/ 7 14:35 65/10/ 7 20:40	6.08	0.628	0.103	0.96	7.60				0.403		
	125	65/10/ 7 14:30 65/10/ 7 22:50	8.33	1.400	0.168	0.96	7.68				0.181		
11	129	67/ 7/ 2 23:35 67/ 7/ 3 4:50	5.25	1.403	0.267	2.16	5.17	67/ 7/ 2 23:30 67/ 7/ 3 12:30	13.00	0.698	0.498	2325.00	

*** TABLE X -101. ***

```
                  ***********************************
                  * SUMMARY OF EVENTS(CONTINUED) *
                  ***********************************
                  *       CATCHMENT FILE : 67     *
*****************************************************************
* PHILADELPHIA, PENNSYLVANIA.  WINGOHOCKING.           (PA 2 1) *
*****************************************************************
* COMBINED SEWERED AREA          CATCHMENT AREA 5326.00 ACRES *
*****************************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
11	128	67/ 7/ 2 23:35 67/ 7/ 3 4:55	5.33	1.452	0.272	1.92	5.17	67/ 7/ 2 23:30 67/ 7/ 3 12:30	13.00	0.698	0.481	2325.00	
	127	67/ 7/ 2 23:25 67/ 7/ 3 4:35	5.17	1.283	0.248	1.80	5.34				0.544		
	126	67/ 7/ 3 0:20 67/ 7/ 3 5: 0	4.67	1.355	0.290	2.16	4.42				0.515		
	125	67/ 7/ 2 23:20 67/ 7/ 3 4:55	5.58	0.828	0.148	0.84	5.42				0.844		
12	129	67/ 7/29 21:15 67/ 7/30 2: 0	4.75	1.097	0.231	1.92	2.98	67/ 7/29 22: 4 67/ 7/30 4:54	6.83	0.496	0.453	1587.40	
	128	67/ 7/29 21:25 67/ 7/30 1:40	4.25	1.496	0.352	1.80	2.82				0.332		
	127	67/ 7/29 21:15 67/ 7/30 2: 0	4.75	1.369	0.288	1.44	2.98				0.363		
	126	67/ 7/29 21:10 67/ 7/30 1:50	4.67	1.351	0.290	1.32	3.07				0.367		
	125	67/ 7/29 21:15 67/ 7/30 2: 0	4.75	0.970	0.204	0.72	2.98				0.512		
13	129	67/ 8/ 9 19:15 67/ 8/10 6:35	11.33	1.047	0.092	1.92	10.11	67/ 8/ 9 20: 0 67/ 8/10 8: 7	12.11	0.349	0.333	2640.00	
	128	67/ 8/ 9 19:25 67/ 8/10 6:45	11.34	1.661	0.147	2.28	9.95				0.210		
	127	67/ 8/ 9 19:10 67/ 8/10 6:45	11.59	1.529	0.132	2.16	10.20				0.228		
	126	67/ 8/ 9 19:15 67/ 8/10 6:35	11.33	1.770	0.156	1.80	10.11				0.197		
	125	67/ 8/ 9 19:15 67/ 8/10 6:35	11.33	0.969	0.086	1.68	10.11				0.360		
14	129	68/ 6/12 9:35 68/ 6/12 21:35	12.00	3.110	0.259	2.40	2.30	68/ 6/12 11:17 68/ 6/13 1:32	14.25	2.725	0.876	5248.20	
	128	68/ 6/12 9:30 68/ 6/12 21:35	12.08	3.440	0.285	2.64	2.38				0.792		
	125	68/ 6/12 9:30 68/ 6/12 21:10	11.67	3.320	0.285	1.92	2.38				0.821		
15	129	68/ 7/24 15:30 68/ 7/24 23: 0	7.50	1.484	0.198	2.52	6.00	68/ 7/24 17:10 68/ 7/25 3:40	10.50	1.200	0.809	3401.90	

*** TABLE X -101. ***

```
                                   ***********************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ***********************************
                                   *        CATCHMENT FILE : 67      *
                          *******************************************************
                          * PHILADELPHIA, PENNSYLVANIA.  WINGOHOCKING.    (PA 2 1) *
                          *******************************************************
                          * COMBINED SEWERED AREA       CATCHMENT AREA 5326.00 ACRES *
                          *******************************************************


                           RAINFALL                                                FLOW
                           --------                                                ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG    PEAK    BASIN  DATE(START-END)     DURATION  VOLUME   RUNOFF  PEAK    DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)  RAIN   RAIN    LAG    YR,MON,D,HR,MIN     (HRS)     (INCH)   COEFF.  FLOW    DAYS
                                                   IN/HR  IN/HR   HRS                                                   CFS
-----  ----  ---------------     --------  ------  -----  -----   -----  ---------------     --------  ------   ------  ----    ----


 15    128     68/ 7/24 15:45      7.25    1.479   0.204  1.92     5.75  68/ 7/24 17:10       10.50    1.200    0.812 3401.90
               68/ 7/24 23: 0                                             68/ 7/25  3:40

       127     68/ 7/24 18: 5      4.92    2.206   0.449  3.72     3.42                                          0.544
               68/ 7/24 23: 0

       126     68/ 7/24 18:15      4.75    2.083   0.438  5.40     3.25                                          0.576
               68/ 7/24 23: 0

       125     68/ 7/24 15:30      7.50    1.834   0.245  3.60     6.00                                          0.654
               68/ 7/24 23: 0

 16    129     68/ 8/ 1 15:50      5.75    1.639   0.285  3.84     5.83  68/ 8/ 1 16: 0       10.16    0.797    0.486 3401.90
               68/ 8/ 1 21:35                                            68/ 8/ 2  2:10

       128     68/ 8/ 1 16:35      5.00    0.810   0.162  3.24     5.08                                          0.903
               68/ 8/ 1 21:35

       127     68/ 8/ 1 16:20      5.25    1.466   0.279  3.00     5.33                                          0.543
               68/ 8/ 1 21:35

       126     68/ 8/ 1 16:45      4.83    0.252   0.052  0.84     4.91                                          3.164
               68/ 8/ 1 21:35

       125     68/ 8/ 1 15:45      5.83    1.828   0.313  3.72     5.91                                          0.436
               68/ 8/ 1 21:35
```

*** TABLE X -101. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 68

HOUSTON, TEXAS. HUNTING BAYOU(CAVALCADE ST.). (TX 1 1)

STORM SEWERED AREA CATCHMENT AREA 659.00 ACRES

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	65/ 5/18 12:15 65/ 5/18 20: 0	7.75	2.600	0.335	1.60	3.25	65/ 5/17 24: 0 65/ 5/19 23:45	47.75	0.594	0.229	49.00	
2	129	65/ 9/22 11:30 65/ 9/22 17: 0	5.50	3.100	0.564	2.12	1.75	65/ 9/21 24: 0 65/ 9/22 23:45	23.75	0.663	0.214	109.00	
3	129	66/ 3/28 12: 0 66/ 3/28 13:45	1.75	1.600	0.914	1.52	1.50	66/ 3/28 11:45 66/ 3/28 23:45	12.00	0.488	0.305	90.00	
4	129	66/ 9/22 11:30 66/ 9/22 17: 0	5.50	3.150	0.573	2.00	1.75	66/ 9/21 24: 0 66/ 9/22 23:45	23.75	0.614	0.195	109.00	
5	129	66/10/ 4 14:30 66/10/ 5 23:45	33.25	4.730	0.142	2.96	6.75	66/10/ 4 19:45 66/10/ 5 23:45	28.00	0.991	0.210	140.00	
6	129	67/ 5/29 9:45 67/ 5/29 19: 0	9.25	2.000	0.216	2.80	7.50	67/ 5/29 15:45 67/ 5/30 2:45	11.00	0.506	0.253	95.00	
7	129	68/ 9/ 8 16:30 68/ 9/ 8 17:45	1.25	2.300	1.840	4.00	1.50	68/ 9/ 8 16: 0 68/ 9/ 8 23:45	7.75	0.586	0.255	121.00	
8	129	68/ 9/17 10:15 68/ 9/17 11:30	1.25	1.950	1.560	2.40	1.75	68/ 9/16 24: 0 68/ 9/17 23:45	23.75	1.203	0.617	144.00	

*** TABLE X -102. ***

```
                              ****************************
                              *     SUMMARY OF EVENTS    *
                              ****************************
                              *    CATCHMENT FILE : 69   *
                     ***************************************************
                     * HOUSTON, TEXAS. HUNTING BAYOU(FALLS ST.).   (TX 1 2) *
                     ***************************************************
                     *  STORM SEWERED AREA     CATCHMENT AREA 2189.00 ACRES *
                     ***************************************************


                          RAINFALL                                             FLOW
                          --------                                             ----

EVENT RAIN DATE(START-END)   DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH)  RAIN  RAIN  LAG   YR,MON,D,HR,MIN    (HRS)    (INCH)  COEFF.  FLOW  DAYS
                                              IN/HR IN/HR HRS                                             CFS
----- ---  ---------------  -------- ------  ----  ----  ----- ---------------  --------  ------  ------  ----  ---

  1   129   65/ 5/18 12: 0    8.00   2.780 0.347 1.20   5.75 65/ 5/17 24: 0    47.75     0.420   0.151 118.00
            65/ 5/18 20: 0                                   65/ 5/19 23:45

  2   129   65/ 9/18 10:30    6.00   1.940 0.323 2.00   5.75 65/ 9/17 24: 0    47.75     0.223   0.115  90.00
            65/ 9/18 16:30                                   65/ 9/19 23:45

  3   129   65/ 9/22 11:30    5.50   2.670 0.485 1.72   2.75 65/ 9/21 24: 0    47.75     0.643   0.241 236.00
            65/ 9/22 17: 0                                   65/ 9/23 23:45

  4   129   66/ 3/28 11:30    2.50   1.650 0.660 1.52   2.00 66/ 3/27 24: 0    23.75     0.305   0.185 250.00
            66/ 3/28 14: 0                                   66/ 3/28 23:45

  5   129   66/ 4/14  0:15   10.00   3.850 0.385 3.12   6.00 66/ 4/13 24: 0    23.75     1.447   0.376 485.00
            66/ 4/14 10:15                                   66/ 4/14 23:45

  6   129   67/ 9/21  9:15   10.75   3.350 0.312 2.00   6.00 67/ 9/20 24: 0    47.75     0.751   0.224 315.00
            67/ 9/21 20: 0                                   67/ 9/22 23:45

  7   129   68/ 5/10  3: 0   56.25   5.150 0.092 2.56   9.75 68/ 5/ 9 24: 0    95.75     4.307   0.836 445.00
            68/ 5/12 11:15                                   68/ 5/13 23:45

  8   129   68/ 9/ 8 16:30    1.50   1.940 1.293 3.36   1.50 68/ 9/ 7 24: 0    47.75     0.625   0.322 325.00
            68/ 9/ 8 18: 0                                   68/ 9/ 9 23:45

  9   129   68/ 9/17 10:15    1.50   1.920 1.280 2.64   2.25 68/ 9/16 24: 0    47.75     1.139   0.593 333.00
            68/ 9/17 11:45                                   68/ 9/18 23:45

 10   129   68/11/ 5 21:30    2.25   2.310 1.027 4.36   2.25 68/11/ 4 24: 0    47.75     0.559   0.242 204.00
            68/11/ 5 23:45                                   68/11/ 6 23:45

 11   129   69/ 1/16  5:15    5.75   2.290 0.398 1.64   5.00 69/ 1/15 24: 0    47.75     0.910   0.397 380.00
            69/ 1/16 11: 0                                   69/ 1/17 23:45
```

*** TABLE X -103. ***

```
*********************************
*       SUMMARY OF EVENTS       *
*********************************
*      CATCHMENT FILE : 70      *
**************************************************************
* HOUSTON, TEXAS. BERING DITCH.                    (TX 1 3) *
**************************************************************
*   STORM SEWERED AREA        CATCHMENT AREA 1754.00 ACRES *
**************************************************************
```

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	64/11/ 4 14: 0 64/11/ 5 15:30	25.50	2.800	0.110	0.64	10.75	64/11/ 4 14:45 64/11/ 5 23:45	33.00	0.796	0.284	130.00	
2	129	64/12/ 9 12: 0 64/12/10 23:15	35.25	4.560	0.129	0.56	17.75	64/12/ 9 13:30 64/12/11 23:45	58.25	4.321	0.948	280.00	
3	129	65/ 5/22 5:30 65/ 5/22 12: 0	6.50	2.220	0.342	1.08	7.25	65/ 5/22 5:45 65/ 5/23 23:45	42.00	0.764	0.344	134.00	
4	129	66/ 3/28 4:15 66/ 3/28 14:15	10.00	1.750	0.175	1.44	9.75	66/ 3/28 0:30 66/ 3/29 23:45	47.25	1.097	0.627	183.00	
5	129	66/ 4/14 1:15 66/ 4/14 11:30	10.25	4.830	0.471	2.24	9.00	66/ 4/14 0:45 66/ 4/15 23:45	47.00	5.953	1.233	607.00	
6	129	66/ 5/20 11:30 66/ 5/20 17:30	6.00	3.290	0.548	5.44	3.25	66/ 5/19 24: 0 66/ 5/21 23:45	47.75	3.335	1.014	533.00	
7	129	66/ 9/ 9 20:15 66/ 9/ 9 22:30	2.25	2.110	0.938	1.80	3.50	66/ 9/ 8 24: 0 66/ 9/10 23:45	47.75	0.643	0.305	187.00	
8	129	67/ 4/13 11: 0 67/ 4/13 13:30	2.50	1.940	0.776	1.76	2.50	67/ 4/12 24: 0 67/ 4/14 23:45	47.75	1.132	0.584	286.00	
9	129	68/ 6/ 4 8: 0 68/ 6/ 4 10:30	2.50	1.300	0.520	1.64	0.75	68/ 6/ 4 7:45 68/ 6/ 4 23:45	16.00	0.820	0.631	360.00	
10	129	68/ 9/17 11: 0 68/ 9/17 12:15	1.25	1.600	1.280	3.16	1.50	68/ 9/17 11: 0 68/ 9/18 23:45	36.75	0.980	0.613	230.00	

*** TABLE X -104. ***

SUMMARY OF EVENTS

CATCHMENT FILE : 71

HOUSTON, TEXAS. BERRY CREEK. (TX 1 4)

STORM SEWERED AREA CATCHMENT AREA 3110.00 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	64/12/ 9 2:45 64/12/11 23:45	69.00	5.190	0.075	0.40	21.50	64/12/ 8 24: 0 64/12/11 23:45	71.75	0.497	0.096	91.00	
2	129	65/ 8/ 5 15:30 65/ 8/ 5 16:30	1.00	1.100	1.100	2.40	1.25	65/ 8/ 4 24: 0 65/ 8/ 6 23:45	47.75	0.139	0.126	92.00	
3	129	66/ 5/18 19:15 66/ 5/18 23: 0	3.75	2.100	0.560	2.04	2.25	66/ 5/18 19: 0 66/ 5/19 23:45	28.75	0.921	0.439	724.00	
4	129	67/ 4/13 10:15 67/ 4/13 12:45	2.50	1.400	0.560	1.40	2.00	67/ 4/12 24: 0 67/ 4/13 23:45	23.75	0.354	0.253	336.00	
5	129	67/ 6/ 1 18: 0 67/ 6/ 1 20: 0	2.00	1.300	0.650	1.40	2.25	67/ 6/ 1 17:45 67/ 6/ 2 23:45	30.00	0.337	0.259	283.00	
6	129	67/ 8/24 13:15 67/ 8/24 14:45	1.50	1.700	1.133	2.12	1.00	67/ 8/23 24: 0 67/ 8/24 23:45	23.75	0.173	0.102	234.00	
7	129	67/ 9/21 9:45 67/ 9/21 14:30	4.75	2.460	0.518	1.84	3.25	67/ 9/21 10:30 67/ 9/21 23:45	13.25	0.409	0.166	535.00	
8	129	68/ 6/ 4 7:45 68/ 6/ 4 8:45	1.00	0.770	0.770	1.32	1.25	68/ 6/ 4 8: 0 68/ 6/ 4 22:45	14.75	0.075	0.097	115.00	
9	129	68/ 9/14 16:15 68/ 9/15 18:45	26.50	8.220	0.310	3.16	2.75	68/ 9/14 17:15 68/ 9/15 23:45	30.50	1.085	0.229	1580.00	
10	129	68/ 9/17 10:15 68/ 9/17 11:30	1.25	2.040	1.632	3.64	1.00	68/ 9/17 9:45 68/ 9/18 23:45	38.00	0.943	0.462	718.00	

*** TABLE X -105. ***

* SUMMARY OF EVENTS *

* CATCHMENT FILE : 78 *

* SALT LAKE CITY, UTAH. LAYTON. (UT 1 1) *

* STORM SEWERED AREA CATCHMENT AREA 1.35 ACRES *

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	123	72/ 9/ 5 2: 5 72/ 9/ 5 19:45	17.67	0.850	0.048	1.38	15.71	72/ 9/ 5 17:28 72/ 9/ 5 21:40	4.20	0.009	0.011	0.03	
	122	72/ 9/ 5 7:45 72/ 9/ 5 22: 0	14.25	0.880	0.062	2.56	10.05				0.010		
	121	72/ 9/ 5 8: 0 72/ 9/ 5 19:53	11.88	0.790	0.066	1.00	9.80				0.011		
	120	72/ 9/ 5 7:50 72/ 9/ 5 19:45	11.92	0.840	0.070	1.83	9.96				0.011		
	119	72/ 9/ 5 0:30 72/ 9/ 5 23:20	22.83	0.820	0.036	1.71	17.30				0.011		
	118	72/ 9/ 5 7:55 72/ 9/ 5 19:47	11.87	0.870	0.073	0.98	9.88				0.010		
2	123	72/ 9/18 20:20 72/ 9/19 3:20	7.00	0.630	0.090	0.98	6.77	72/ 9/19 2: 8 72/ 9/19 4:10	2.03	0.010	0.016	0.01	
	122	72/ 9/18 20:30 72/ 9/19 3:36	7.10	0.640	0.090	0.81	6.60				0.016		
	121	72/ 9/18 20:30 72/ 9/19 3:40	7.16	0.600	0.084	2.56	6.60				0.017		
	120	72/ 9/18 21:15 72/ 9/19 3:20	6.08	0.550	0.090	0.61	5.85				0.018		
	119	72/ 9/18 21:15 72/ 9/19 3:25	6.16	0.560	0.091	1.10	-5.85				0.018		
	118	72/ 9/18 20:27 72/ 9/19 3:17	6.83	0.570	0.083	2.88	6.65				0.018		
3	123	72/10/ 4 19:15 72/10/ 5 8:17	13.03	0.630	0.048	0.53	13.38	72/10/ 5 7:56 72/10/ 5 10: 0	2.07	0.009	0.015	0.01	
	122	72/10/ 4 19:15 72/10/ 5 8:47	13.53	0.580	0.043	0.43	13.38				0.016		
	121	72/10/ 4 19:30 72/10/ 5 8:45	13.25	0.550	0.042	0.30	13.13				0.017		
	120	72/10/ 4 20:25 72/10/ 5 9:55	13.50	0.550	0.041	0.32	12.22				0.017		
	119	72/10/ 4 19: 5 72/10/ 5 8:45	13.67	0.600	0.044	0.40	13.55				0.016		
	118	72/10/ 4 10:35 72/10/ 5 8:32	21.95	0.600	0.027	1.38	22.05				0.016		

*** TABLE X -106. ***

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                              ********************************
                              * SUMMARY OF EVENTS(CONTINUED) *
                              ********************************
                              *     CATCHMENT FILE : 78      *
                    ****************************************************
                    * SALT LAKE CITY, UTAH.   LAYTON.           (UT 1 1) *
                    ****************************************************
                    *  STORM SEWERED AREA      CATCHMENT AREA   1.35 ACRES *
                    ****************************************************

                                  RAINFALL                                              FLOW
                                  --------                                              ----

EVENT RAIN DATE(START-END)    DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)    DURATION   VOLUME  RUNOFF  PEAK  DRY
      GAGE YR,MON,D,HR,MIN      (HRS)  (INCH)  RAIN  RAIN  LAG   YR,MON,D,HR,MIN      (HRS)    (INCH)  COEFF.  FLOW  DAYS
                                               IN/HR IN/HR HRS                                                 CFS
----- ---- ---------------- -------- ------  ----- ----- ----- ---------------- --------  ------  ------  ----  ----

  4   123   72/10/ 9  1:35    3.42   0.230  0.067  0.65   0.92  72/10/ 9  1:55    0.92     0.000   0.002   0.00
            72/10/ 9  5: 0                                      72/10/ 9  2:50

      122   72/10/ 9  1:32    1.47   0.230  0.157  1.15   0.97                                     0.002
            72/10/ 9  3: 0

      121   72/10/ 9  1:45    1.08   0.220  0.203  0.75   0.75                                     0.002
            72/10/ 9  2:50

      120   72/10/ 9  2:40    1.84   0.240  0.131  0.89  -0.16                                     0.002
            72/10/ 9  4:30

      119   72/10/ 9  1:30    4.50   0.250  0.056  0.98   1.00                                     0.002
            72/10/ 9  6: 0

      118   72/10/ 9  1:45    0.95   0.240  0.253  2.36   0.75                                     0.002
            72/10/ 9  2:42

  5   123   72/10/19 11: 3   36.95   1.300  0.035  0.22  19.38  72/10/20  3:16   15.60     0.059   0.045   0.04
            72/10/20 24: 0                                      72/10/20 18:52

      122   72/10/19  9:45   30.91   1.300  0.042  0.23  20.68                                     0.045
            72/10/20 16:40

      121   72/10/19 10:45   30.25   1.250  0.041  0.22  19.68                                     0.047
            72/10/20 17: 0

      120   72/10/19 10:40   30.00   1.230  0.041  0.36  19.77                                     0.048
            72/10/20 16:40

      119   72/10/19 10:45   30.25   1.250  0.041  0.35  19.68                                     0.047
            72/10/20 17: 0

      118   72/10/19 11: 0   35.00   1.250  0.036  0.40  19.43                                     0.047
            72/10/20 22: 0

  6   123   72/10/23 20:27    2.35   0.400  0.170  0.39   2.41  72/10/23 21:52    3.80     0.025   0.063   0.04
            72/10/23 22:48                                      72/10/24  1:40

      122   72/10/23 20:30    2.50   0.450  0.180  0.27   2.36                                     0.056
            72/10/23 23: 0

      121   72/10/23 20:28    2.54   0.420  0.166  0.37   2.40                                     0.060
            72/10/23 23: 0

      120   72/10/23 20:30    3.00   0.400  0.133  0.39   2.36                                     0.063
            72/10/23 23:30

      119   72/10/23 20:25    2.59   0.400  0.155  0.26   2.45                                     0.063
            72/10/23 23: 0

      118   72/10/23 20:20    2.67   0.380  0.142  0.33   2.53                                     0.067
            72/10/23 23: 0


                                       *** TABLE X -106. ***
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* SUMMARY OF EVENTS(CONTINUED) *

*   CATCHMENT FILE : 78   *

* SALT LAKE CITY, UTAH.   LAYTON.   (UT 1 1) *

*   STORM SEWERED AREA   CATCHMENT AREA   1.35 ACRES *

		RAINFALL							FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
7	123	72/10/28 19:50 72/10/29 12:15	16.42	0.350	0.021	0.06	3.28	72/10/28 21:50 72/10/29 1:12	3.37	0.001	0.004	0.00	
	122	72/10/28 19:50 72/10/29 13:35	17.75	0.340	0.019	0.22	3.28				0.004		
	121	72/10/28 19:31 72/10/29 13:48	18.28	0.290	0.016	0.02	3.60				0.004		
	120	72/10/28 19:35 72/10/29 12:20	16.75	0.230	0.014	0.01	3.53				0.006		
	119	72/10/28 19:33 72/10/29 12:35	17.04	0.250	0.015	0.01	3.57				0.005		
	118	72/10/28 19:28 72/10/29 12:45	17.29	0.210	0.012	0.01	3.65				0.006		
8	123	73/ 4/17 4: 7 73/ 4/17 14:35	10.47	0.970	0.093	1.49	5.22	73/ 4/17 8:22 73/ 4/17 15:58	7.60	0.154	0.159	0.14	
	122	73/ 4/17 4: 7 73/ 4/17 14:15	10.13	1.000	0.099	0.60	5.22				0.154		
	121	73/ 4/17 7:30 73/ 4/17 14:15	6.75	0.920	0.136	0.60	1.83				0.167		
	120	73/ 4/17 4:15 73/ 4/17 13:30	9.25	0.780	0.084	1.80	5.08				0.197		
	119	73/ 4/17 6: 0 73/ 4/17 14: 0	8.00	0.950	0.119	0.60	3.33				0.162		
	118	73/ 4/17 3:15 73/ 4/17 13:50	10.58	0.950	0.090	1.20	6.08				0.162		
9	121	73/ 4/28 17:25 73/ 4/28 19:45	2.33	0.190	0.081	1.80	0.50	73/ 4/28 17:38 73/ 4/28 19:51	2.22	0.002	0.009	0.00	
10	122	73/ 4/28 20:45 73/ 4/29 11:30	14.75	0.800	0.054	0.43	13.18	73/ 4/29 8:46 73/ 4/29 14:21	5.58	0.054	0.068	0.04	
	120	73/ 4/29 5:15 73/ 4/29 13:30	8.25	0.350	0.042	0.40	4.68				0.155		
	119	73/ 4/28 20:45 73/ 4/29 10: 0	13.25	0.730	0.055	0.68	13.18				0.074		
	118	73/ 4/29 5: 0 73/ 4/29 11: 0	6.00	0.580	0.097	0.46	4.93				0.094		
11	123	73/ 5/25 3:30 73/ 5/25 12:15	8.75	0.950	0.109	0.60	7.27	73/ 5/25 5:53 73/ 5/25 14:43	8.83	0.057	0.060	0.08	

*** TABLE X -106. ***

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*******************************
* SUMMARY OF EVENTS(CONTINUED) *
*******************************
*       CATCHMENT FILE : 78    *
*****************************************************
* SALT LAKE CITY, UTAH.   LAYTON.            (UT 1 1) *
*****************************************************
*    STORM SEWERED AREA        CATCHMENT AREA   1.35 ACRES *
*****************************************************
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		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
11	122	73/ 5/25 3:30 73/ 5/25 12: 0	8.50	0.950	0.112	0.60	7.27	73/ 5/25 5:53 73/ 5/25 14:43	8.83	0.057	0.060	0.08	
	121	73/ 5/25 3:30 73/ 5/25 12: 0	8.50	0.950	0.112	0.60	7.27				0.060		
	120	73/ 5/25 3:33 73/ 5/25 15:58	12.42	0.760	0.061	0.51	7.22				0.074		
	119	73/ 5/25 3:30 73/ 5/25 12:30	9.00	0.900	0.100	1.00	7.27				0.063		
	118	73/ 5/25 3:15 73/ 5/25 12: 0	8.75	0.850	0.097	0.60	7.52				0.067		
12	123	73/ 5/25 19:45 73/ 5/26 0:45	5.00	0.400	0.080	1.20	0.58	73/ 5/25 19:52 73/ 5/26 4:29	8.62	0.099	0.248	0.08	
	122	73/ 5/25 19:45 73/ 5/26 0:50	5.08	0.450	0.089	1.20	0.58				0.220		
	121	73/ 5/25 19:45 73/ 5/26 0:45	5.00	0.370	0.074	2.40	0.58				0.268		
	119	73/ 5/25 19:50 73/ 5/26 0:45	4.92	0.500	0.102	1.20	0.50				0.198		
	118	73/ 5/25 19:30 73/ 5/26 0:45	5.25	0.450	0.086	1.20	0.83				0.220		
13	123	73/ 7/18 17:41 73/ 7/18 18:55	1.23	0.460	0.373	1.08	1.37	73/ 7/18 18:46 73/ 7/18 19:53	1.12	0.015	0.033	0.04	
	122	73/ 7/18 17:46 73/ 7/18 19: 1	1.25	0.480	0.384	0.94	1.28				0.031		
	121	73/ 7/18 17:40 73/ 7/18 19:18	1.63	0.560	0.343	1.50	1.38				0.027		
	120	73/ 7/18 17:27 73/ 7/18 19: 2	1.58	0.490	0.310	0.89	1.60				0.031		
	119	73/ 7/18 17:40 73/ 7/18 18:54	1.23	0.490	0.397	1.17	1.38				0.031		
	118	73/ 7/18 17:53 73/ 7/18 19:26	1.55	0.460	0.297	0.94	1.16				0.033		
14	123	73/ 7/19 11: 0 73/ 7/19 17:29	6.48	0.760	0.117	1.67	2.48	73/ 7/19 12:13 73/ 7/19 18:33	6.33	0.159	0.209	0.24	
	122	73/ 7/19 10:48 73/ 7/19 17:32	6.73	0.770	0.114	0.92	2.68				0.206		

*** TABLE X -106. ***

```
                               *********************************
                               * SUMMARY OF EVENTS(CONTINUED) *
                               *********************************
                               *       CATCHMENT FILE : 78      *
                    ******************************************************
                    * SALT LAKE CITY, UTAH.    LAYTON.              (UT 1 1) *
                    ******************************************************
                    *   STORM SEWERED AREA         CATCHMENT AREA    1.35 ACRES *
                    ******************************************************

                           RAINFALL                                          FLOW
                           --------                                          ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)   (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN    (HRS)    (INCH)   COEFF.  FLOW  DAYS
                                                  IN/HR  IN/HR  HRS                                                CFS
-----  ----  ---------------     --------  ------  ----   ----   ----  ---------------   --------  ------   ------  ----  ----

 14    121    73/ 7/19 10:44      7.09    0.780  0.110  0.94    2.75  73/ 7/19 12:13     6.33     0.159    0.203   0.24
              73/ 7/19 17:49                                          73/ 7/19 18:33

       120    73/ 7/19 10:42      6.07    0.740  0.122  1.54    2.78                                         0.214
              73/ 7/19 16:46

       119    73/ 7/19 10:48      6.57    0.740  0.113  1.10    2.68                                         0.214
              73/ 7/19 17:22

       118    73/ 7/19 11:36      6.12    0.770  0.126  2.13    1.88                                         0.206
              73/ 7/19 17:43

 15    123    73/ 9/ 1 22:16      8.12    0.790  0.097  0.24    6.90  73/ 9/ 2  0:41     7.20     0.126    0.159   0.08
              73/ 9/ 2  6:23                                          73/ 9/ 2  7:53

       122    73/ 9/ 1 22: 8      7.08    0.770  0.109  0.34    7.03                                         0.164
              73/ 9/ 2  5:13

       121    73/ 9/ 1 22: 1      8.65    0.800  0.093  0.21    7.15                                         0.157
              73/ 9/ 2  6:40

       120    73/ 9/ 1 22:20      7.63    0.730  0.096  0.23    6.83                                         0.173
              73/ 9/ 2  5:58

       119    73/ 9/ 1 22: 7      7.80    0.740  0.095  0.85    7.05                                         0.170
              73/ 9/ 2  5:55

       118    73/ 9/ 1 22:14      8.23    0.720  0.087  0.25    6.93                                         0.175
              73/ 9/ 2  6:28

 16    123    73/ 9/ 8  0:10     11.54    0.400  0.035  1.54    0.57  73/ 9/ 8  0:33     8.45     0.004    0.011   0.00
              73/ 9/ 8 11:42                                          73/ 9/ 8  9: 0

       122    73/ 9/ 8  1:14     13.84    0.340  0.025  0.14   -0.50                                         0.013
              73/ 9/ 8 15: 4

       121    73/ 9/ 7 23:54     11.98    0.400  0.033  0.15    0.83                                         0.011
              73/ 9/ 8 11:53

       120    73/ 9/ 7 24: 0     14.91    0.420  0.028  0.13    0.73                                         0.010
              73/ 9/ 8 14:55

       119    73/ 9/ 7 24: 0     15.05    0.440  0.029  0.19    0.73                                         0.010
              73/ 9/ 8 15: 3

       118    73/ 9/ 8  0: 2     15.17    0.410  0.027  0.16    0.70                                         0.011
              73/ 9/ 8 15:12

 17    123    73/ 9/23  7:15      4.95    1.150  0.232  0.51    5.27  73/ 9/23  9:14     7.12     0.097    0.084   0.04
              73/ 9/23 12:12                                          73/ 9/23 16:21

       122    73/ 9/23  7:18      4.92    1.180  0.240  0.46    5.22                                         0.082
              73/ 9/23 12:13


                                      *** TABLE X -106. ***
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```
                              ********************************
                              * SUMMARY OF EVENTS(CONTINUED) *
                              ********************************
                              *       CATCHMENT FILE : 78    *
                 ****************************************************************
                 * SALT LAKE CITY, UTAH.   LAYTON.                     (UT 1 1) *
                 ****************************************************************
                 *    STORM SEWERED AREA         CATCHMENT AREA     1.35 ACRES *
                 ****************************************************************


                                 RAINFALL                                                    FLOW
                                 --------                                                    ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR IN/HR   HRS                                                   CFS
-----  ----  ---------------    --------  ------  ----  ----    ----- ---------------    --------   ------   ------   ----  ----

 17    121    73/ 9/23  7:16     5.02     1.140  0.227  0.40    5.25  73/ 9/23  9:14     7.12      0.097    0.085    0.04
              73/ 9/23 12:17                                          73/ 9/23 16:21

       119    73/ 9/23  7:30     5.45     1.120  0.206  0.39    5.02                                        0.087
              73/ 9/23 12:57

       118    73/ 9/23  7:24     5.17     1.070  0.207  0.35    5.12                                        0.091
              73/ 9/23 12:34

 18    123    73/11/18  7:22    13.07     0.920  0.070  0.32    2.35  73/11/18  7:40    10.23      0.103    0.112    0.09
              73/11/18 20:26                                          73/11/18 17:54

       122    73/11/18  6:59    12.68     0.980  0.077  0.92    2.73                                        0.105
              73/11/18 19:40

       121    73/11/18  6:56    12.64     0.990  0.078  0.92    2.79                                        0.104
              73/11/18 19:34

       120    73/11/18  6:56    11.05     1.000  0.090  1.02    2.79                                        0.103
              73/11/18 17:59

       119    73/11/18  6:58    11.67     0.960  0.082  0.94    2.75                                        0.107
              73/11/18 18:38

       118    73/11/18  6:54    10.93     1.010  0.092  1.28    2.82                                        0.102
              73/11/18 17:50
```

*** TABLE X -106. ***

```
                                        ******************************
                                        *      SUMMARY OF EVENTS     *
                                        ******************************
                                        *      CATCHMENT FILE : 79   *
                              **************************************************
                              * SALT LAKE CITY, UTAH. PARLEYS CANYON I.   (UT 1 2) *
                              **************************************************
                              *   STORM SEWERED AREA     CATCHMENT AREA   0.54 ACRES *
                              **************************************************


                                    RAINFALL                                                 FLOW
                                    --------                                                 ----

EVENT RAIN  DATE(START-END)   DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)   DURATION  VOLUME  RUNOFF  PEAK  DRY
      GAGE  YR,MON,D,HR,MIN      (HRS)  (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN   (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                IN/HR IN/HR  HRS                                               CFS
----- ----  --------------    --------  ------  ----  ----   ----- ---------------   --------  ------  ------  ----  ----


  1   123    72/ 8/13 18: 0       0.60   0.140  0.234 0.23    2.96 72/ 8/13 20:46     0.23      0.000   0.000  0.00
             72/ 8/13 18:36                                        72/ 8/13 21: 0

      119    72/ 8/13  0:20      18.17   0.230  0.013 0.36   20.63                                      0.000
             72/ 8/13 18:30

      118    72/ 8/13 18: 5       0.75   0.150  0.200 0.20    2.88                                      0.000
             72/ 8/13 18:50

  2   123    72/ 9/ 2 19:30       1.75   0.270  0.154 0.71    1.98 72/ 9/ 2 21: 2     0.77      0.008   0.028  0.01
             72/ 9/ 2 21:15                                        72/ 9/ 2 21:48

      122    72/ 9/ 2 19:35       3.17   0.350  0.110 0.66    1.90                                      0.022
             72/ 9/ 2 22:45

      121    72/ 9/ 2 20:40       0.87   0.320  0.369 1.48    0.82                                      0.024
             72/ 9/ 2 21:32

      120    72/ 9/ 2 20:15       1.08   0.400  0.370 1.71    1.23                                      0.019
             72/ 9/ 2 21:20

      119    72/ 9/ 2 20:30       1.28   0.400  0.312 2.36    0.98                                      0.019
             72/ 9/ 2 21:47

      118    72/ 9/ 2 20:25       0.84   0.210  0.251 0.30    1.07                                      0.036
             72/ 9/ 2 21:15

  3   123    72/ 9/ 5 10:17      11.72   0.960  0.082 2.56    2.13 72/ 9/ 5  8:24     7.60      0.039   0.040  0.11
             72/ 9/ 5 22: 0                                        72/ 9/ 5 16: 0

      122    72/ 9/ 5 10:30       8.75   1.020  0.117 2.32    1.91                                      0.038
             72/ 9/ 5 19:15

      121    72/ 9/ 5 10:44       9.34   0.930  0.100 1.66    1.68                                      0.041
             72/ 9/ 5 20: 4

      120    72/ 9/ 5 10:47       9.13   1.000  0.109 1.58    1.63                                      0.039
             72/ 9/ 5 19:55

      119    72/ 9/ 5  8:14      12.02   1.110  0.092 3.20    4.18                                      0.035
             72/ 9/ 5 20:15

      118    72/ 9/ 5  8: 3      11.87   1.000  0.084 2.32    4.37                                      0.039
             72/ 9/ 5 19:55

  4   123    72/ 9/18 17:55      10.09   0.500  0.050 0.36    8.42 72/ 9/19  1:40     2.17      0.076   0.152  0.05
             72/ 9/19  4: 0                                        72/ 9/19  3:50

      122    72/ 9/18 17:50       9.30   0.400  0.043 0.53    8.50                                      0.190
             72/ 9/19  3: 8

      121    72/ 9/18 20:30       8.00   0.440  0.055 0.77    5.83                                      0.173
             72/ 9/19  4:30


                                          *** TABLE X -107. ***
```

```
*********************************
* SUMMARY OF EVENTS(CONTINUED) *
*********************************
*        CATCHMENT FILE : 79    *
*************************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON I.          (UT 1 2) *
*************************************************************
*   STORM SEWERED AREA         CATCHMENT AREA    0.54 ACRES *
*************************************************************
```

				RAINFALL					FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
4	120	72/ 9/18 17: 5 72/ 9/19 3: 5	10.00	0.440	0.044	0.73	9.25	72/ 9/19 1:40 72/ 9/19 3:50	2.17	0.076	0.173	0.05	
5	123	72/ 9/19 15:50 72/ 9/19 16: 5	0.25	0.100	0.400	0.40	0.15	72/ 9/19 15:52 72/ 9/19 16:20	0.47	0.003	0.028	0.02	
	122	72/ 9/19 15:58 72/ 9/19 16: 8	0.17	0.110	0.655	2.28	0.02				0.025		
	121	72/ 9/19 15:57 72/ 9/19 16: 3	0.10	0.120	1.229	2.24	0.03				0.023		
	120	72/ 9/19 11: 5 72/ 9/19 16:10	5.08	0.180	0.035	1.10	4.90				0.015		
	118	72/ 9/19 15:45 72/ 9/19 16: 0	0.25	0.110	0.440	0.44	0.23				0.025		
6	123	72/10/ 4 19:55 72/10/ 5 0: 8	4.22	0.440	0.104	6.40	0.40	72/10/ 4 20:14 72/10/ 5 1:14	5.00	0.024	0.055	0.26	
	122	72/10/ 4 20: 2 72/10/ 5 0:15	4.22	0.390	0.092	5.40	0.29				0.062		
	121	72/10/ 4 19:53 72/10/ 5 0:15	4.37	0.400	0.092	2.19	0.43				0.061		
	120	72/10/ 4 20: 5 72/10/ 4 23:35	3.50	0.410	0.117	3.54	0.23				0.059		
	118	72/10/ 4 20: 0 72/10/ 5 0:46	4.77	0.420	0.088	7.04	0.32				0.058		
7	123	72/10/ 9 1:55 72/10/ 9 4:25	2.50	0.310	0.124	0.24	1.02	72/10/ 9 2:16 72/10/ 9 6:32	4.27	0.003	0.009	0.00	
	122	72/10/ 9 2:10 72/10/ 9 3:30	1.34	0.320	0.240	0.42	0.77				0.009		
	121	72/10/ 9 2:17 72/10/ 9 3:33	1.27	0.220	0.174	0.22	0.65				0.013		
	118	72/10/ 9 2:15 72/10/ 9 3:40	1.41	0.360	0.255	0.27	0.68				0.008		
8	123	72/10/ 9 22:40 72/10/10 5:30	6.84	0.190	0.028	0.19	5.65	72/10/10 3:12 72/10/10 6: 3	2.85	0.002	0.009	0.00	
	122	72/10/ 9 22:30 72/10/10 5:10	6.66	0.210	0.032	0.09	5.82				0.008		
	121	72/10/ 9 18:45 72/10/10 6: 0	11.25	0.250	0.022	0.13	9.57				0.007		

*** TABLE X -107. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 79 *

* SALT LAKE CITY, UTAH. PARLEYS CANYON I. (UT 1 2) *

* STORM SEWERED AREA CATCHMENT AREA 0.54 ACRES *

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
8	120	72/10/ 9 22:15 72/10/10 6: 0	7.75	0.190	0.025	0.07	6.07	72/10/10 3:12 72/10/10 6: 3	2.85	0.002	0.009	0.00	
	118	72/10/ 9 22:30 72/10/10 4: 0	5.50	0.130	0.024	0.13	5.82				0.014		
9	118	72/10/19 10:25 72/10/20 6:45	20.34	0.820	0.040	0.20	24.18	72/10/20 1:32 72/10/20 10:48	9.27	0.007	0.009	0.00	
10	123	72/10/23 22:10 72/10/24 2:55	4.75	0.650	0.137	0.40	1.43	72/10/23 22:26 72/10/24 1:20	2.90	0.015	0.023	0.01	
	122	72/10/23 22:10 72/10/24 3:30	5.34	0.600	0.112	0.51	1.43				0.025		
	121	72/10/23 22: 0 72/10/24 4:41	6.68	0.650	0.097	0.42	1.60				0.023		
	120	72/10/23 22: 5 72/10/24 2:12	4.12	0.630	0.153	0.33	1.52				0.024		
	119	72/10/23 22:15 72/10/24 2:10	3.91	0.450	0.115	0.32	1.35				0.033		
	118	72/10/23 22:10 72/10/24 1:15	3.09	0.600	0.194	0.34	1.43				0.025		
11	122	72/10/28 21:30 72/10/28 22:10	0.66	0.050	0.075	0.08	0.63	72/10/28 21:43 72/10/29 10:50	13.12	0.053	1.056	0.03	
	120	72/10/28 21:30 72/10/28 23:30	2.00	0.080	0.040	0.04	0.63				0.660		
12	123	72/10/25 11:46 72/10/30 14:19	122.55	0.190	0.002	0.00	122.95	72/10/30 14:28 72/10/30 15:30	1.04	0.000	0.002	0.00	
13	119	72/11/ 5 0:46 72/11/ 5 24: 0	23.23	0.600	0.026	0.07	23.55	72/11/ 5 23:54 72/11/ 6 6: 9	6.25	0.002	0.004	0.00	
14	123	73/ 4/17 8: 0 73/ 4/17 20: 0	12.00	0.400	0.033	0.20	6.32	73/ 4/17 14:13 73/ 4/18 1:46	11.55	0.007	0.017	0.00	
	122	73/ 4/17 8: 0 73/ 4/17 20: 0	12.00	0.430	0.036	0.36	6.32				0.015		
	120	73/ 4/17 8:30 73/ 4/17 20: 0	11.50	0.400	0.035	0.20	5.82				0.017		
	119	73/ 4/17 8: 0 73/ 4/17 19:45	11.75	0.250	0.021	0.20	6.32				0.026		
	118	73/ 4/17 8:30 73/ 4/17 19: 0	10.50	0.350	0.033	1.49	5.82				0.019		

*** TABLE X -107. ***

```
        ***********************************
        * SUMMARY OF EVENTS(CONTINUED) *
        ***********************************
        *        CATCHMENT FILE : 79       *
****************************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON I.            (UT 1 2) *
****************************************************************
*    STORM SEWERED AREA        CATCHMENT AREA    0.54 ACRES *
****************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
15	123	73/ 4/19 10: 0 73/ 4/19 11: 0	1.00	0.070	0.070	0.10	4.68	73/ 4/19 10:44 73/ 4/19 19:26	8.70	0.001	0.009	0.00	
	122	73/ 4/19 9:30 73/ 4/19 10: 0	0.50	0.150	0.300	0.40	5.18				0.004		
	121	73/ 4/19 8:35 73/ 4/19 9:30	0.92	0.100	0.109	0.12	6.10				0.006		
	120	73/ 4/19 8:50 73/ 4/19 9:20	0.50	0.100	0.200	0.30	5.85				0.006		
	119	73/ 4/19 8:30 73/ 4/19 16: 0	7.50	0.080	0.011	0.12	6.18				0.008		
	118	73/ 4/19 8:30 73/ 4/19 9: 0	0.50	0.100	0.200	0.20	6.18				0.006		
16	123	73/ 4/28 18:45 73/ 4/28 23: 0	4.25	0.150	0.035	0.60	2.77	73/ 4/28 21:29 73/ 4/28 23:54	2.42	0.002	0.011	0.00	
	122	73/ 4/28 22:30 73/ 4/28 23: 0	0.50	0.080	0.160	0.20	-0.98				0.021		
	121	73/ 4/28 20:55 73/ 4/28 22:30	1.58	0.150	0.095	1.20	0.60				0.011		
	120	73/ 4/28 21:15 73/ 4/28 23:15	2.00	0.150	0.075	0.30	0.27				0.011		
	119	73/ 4/28 21:15 73/ 4/29 0:30	3.25	0.100	0.031	0.05	0.27				0.017		
	118	73/ 4/28 21:15 73/ 4/28 23: 0	1.75	0.150	0.086	0.40	0.27				0.011		
17	123	73/ 4/29 5:55 73/ 4/29 14:40	8.75	0.640	0.073	0.30	6.38	73/ 4/29 6:41 73/ 4/29 19:23	12.70	0.025	0.039	0.07	
	122	73/ 4/29 10:45 73/ 4/29 14:30	3.75	0.400	0.107	0.20	1.55				0.062		
	121	73/ 4/29 5: 0 73/ 4/29 14: 0	9.00	0.470	0.052	0.20	7.30				0.053		
	120	73/ 4/29 10:45 73/ 4/29 14:25	3.67	0.450	0.123	0.40	1.55				0.055		
	119	73/ 4/29 11:45 73/ 4/29 15:20	3.58	0.300	0.084	0.30	0.55				0.083		
	118	73/ 4/29 5:55 73/ 4/29 14:20	8.42	0.420	0.050	0.60	6.38				0.059		

*** TABLE X -107. ***

```
*******************************
* SUMMARY OF EVENTS(CONTINUED) *
*******************************
*        CATCHMENT FILE : 79   *
************************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON I.          (UT 1 2) *
************************************************************
*    STORM SEWERED AREA        CATCHMENT AREA     0.54 ACRES *
************************************************************
```

		RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
18	123	73/ 5/20 16:45 73/ 5/20 19: 5	2.33	0.100	0.043	0.84	0.15	73/ 5/20 16:52 73/ 5/21 16: 0	23.13	0.021	0.206	0.00	
	122	73/ 5/20 16:45 73/ 5/20 19: 5	2.33	0.150	0.064	1.20	0.15				0.137		
	121	73/ 5/20 16:15 73/ 5/20 18:32	2.28	0.150	0.066	1.20	0.65				0.137		
19	123	73/ 5/25 4:15 73/ 5/26 5: 0	24.75	1.530	0.062	1.20	7.93	73/ 5/25 4:31 73/ 5/26 7:44	27.22	0.111	0.073	0.02	
	122	73/ 5/25 4:25 73/ 5/26 5: 0	24.58	1.530	0.062	0.60	7.77				0.073		
	121	73/ 5/25 4: 0 73/ 5/25 21:15	17.25	1.400	0.081	0.60	8.18				0.079		
	120	73/ 5/25 4:15 73/ 5/26 5:15	25.00	1.500	0.060	0.60	7.93				0.074		
	119	73/ 5/25 4:20 73/ 5/26 9: 0	28.67	0.870	0.030	0.60	7.85				0.128		
	118	73/ 5/25 4:30 73/ 5/26 5: 0	24.50	1.530	0.062	1.80	7.68				0.073		
20	123	73/ 6/ 1 16:45 73/ 6/ 1 18:15	1.50	0.300	0.200	0.60	0.68	73/ 6/ 1 17:11 73/ 6/ 1 18:50	1.65	0.007	0.024	0.01	
	122	73/ 6/ 1 17: 0 73/ 6/ 1 18: 5	1.08	0.250	0.231	0.60	0.43				0.029		
	121	73/ 6/ 1 16:30 73/ 6/ 1 17:45	1.25	0.250	0.200	0.60	0.93				0.029		
	120	73/ 6/ 1 16:45 73/ 6/ 1 18:15	1.50	0.300	0.200	0.60	0.68				0.024		
	119	73/ 6/ 1 17: 0 73/ 6/ 1 18: 0	1.00	0.150	0.150	0.20	0.43				0.049		
21	123	73/ 7/19 11:47 73/ 7/19 13:34	1.79	0.780	0.437	1.64	0.47	73/ 7/19 12: 8 73/ 7/19 23: 0	10.87	0.073	0.093	0.11	
	122	73/ 7/19 12: 4 73/ 7/19 13:37	1.55	0.730	0.472	1.83	0.18				0.100		
	121	73/ 7/19 11:29 73/ 7/19 13:54	2.42	0.820	0.339	3.20	0.77				0.089		
	120	73/ 7/19 11:56 73/ 7/19 13:26	1.50	0.760	0.507	1.95	0.32				0.096		

*** TABLE X -107. ***

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                  ********************************
                  * SUMMARY OF EVENTS(CONTINUED) *
                  ********************************
                  *      CATCHMENT FILE : 79     *
**********************************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON I.                 (UT 1 2) *
**********************************************************************
*    STORM SEWERED AREA            CATCHMENT AREA      0.54 ACRES *
**********************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
21	119	73/ 7/19 11:56 73/ 7/19 13:25	1.48	0.810	0.546	2.41	0.32	73/ 7/19 12: 8 73/ 7/19 23: 0	10.87	0.073	0.090	0.11	
	118	73/ 7/19 11:39 73/ 7/19 13:34	1.92	0.720	0.375	1.28	0.60				0.101		
22	120	73/ 8/16 15:10 73/ 8/16 16:49	1.65	0.490	0.297	4.27	0.80	73/ 8/16 15:50 73/ 8/16 20:58	5.13	0.001	0.003	0.00	
	119	73/ 8/16 15:40 73/ 8/16 16:53	1.22	0.480	0.394	9.60	0.30				0.003		
	118	73/ 8/16 15:35 73/ 8/16 15:55	0.33	0.480	1.446	10.88	0.38				0.003		
23	123	73/ 8/31 21:38 73/ 9/ 2 6:58	33.33	1.450	0.044	1.54	8.62	73/ 8/31 23: 8 73/ 9/ 2 1:32	26.40	0.046	0.031	0.14	
	122	73/ 8/31 22:37 73/ 9/ 2 6:37	32.00	1.380	0.043	1.58	7.64				0.033		
	121	73/ 8/31 22: 1 73/ 9/ 2 7: 4	33.05	1.430	0.043	1.02	8.23				0.032		
	120	73/ 8/31 22:17 73/ 9/ 2 6:41	32.40	1.120	0.035	0.78	7.97				0.041		
	119	73/ 8/31 21:51 73/ 9/ 2 7:16	33.42	1.560	0.047	1.13	8.40				0.029		
	118	73/ 8/31 21:43 73/ 9/ 2 6:43	33.00	1.450	0.044	0.71	8.54				0.031		
24	122	73/ 9/23 7:56 73/ 9/23 13:19	5.39	0.940	0.175	0.50	1.07	73/ 9/23 8:21 73/ 9/23 15:32	7.18	0.026	0.027	0.03	
	121	73/ 9/23 7:17 73/ 9/23 13:32	6.25	1.030	0.165	0.92	1.72				0.025		
	120	73/ 9/23 7:49 73/ 9/23 12:58	5.15	0.990	0.192	0.71	1.18				0.026		
	119	73/ 9/23 7:38 73/ 9/23 14: 8	6.50	1.100	0.169	0.77	1.37				0.023		
	118	73/ 9/23 7:41 73/ 9/23 12:57	5.27	1.040	0.197	0.71	1.32				0.025		
25	123	73/ 9/25 1: 7 73/ 9/25 19:56	18.82	0.820	0.044	0.40	4.23	73/ 9/25 1:23 73/ 9/25 16: 0	14.62	0.031	0.038	0.01	
	122	73/ 9/25 1: 2 73/ 9/25 20:16	19.23	0.840	0.044	1.02	4.32				0.037		

*** TABLE X -107. ***

SUMMARY OF EVENTS(CONTINUED)

CATCHMENT FILE : 79

SALT LAKE CITY, UTAH. PARLEYS CANYON I. (UT 1 2)

STORM SEWERED AREA CATCHMENT AREA 0.54 ACRES

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
25	121	73/ 9/25 0:51 73/ 9/25 16:33	15.70	0.770	0.049	0.26	4.50	73/ 9/25 1:23 73/ 9/25 16: 0	14.62	0.031	0.041	0.01	
	120	73/ 9/25 1: 7 73/ 9/25 17: 5	15.97	0.840	0.053	0.28	4.23				0.037		
	119	73/ 9/25 1: 5 73/ 9/25 16:47	15.70	0.820	0.052	0.28	4.27				0.038		
	118	73/ 9/25 1:10 73/ 9/25 17: 0	15.84	0.930	0.059	0.54	4.18				0.034		
26	122	73/10/ 8 9:25 73/10/ 8 19:13	9.80	0.350	0.036	0.23	5.27	73/10/ 8 14:24 73/10/ 8 22:16	7.87	0.004	0.012	0.00	
	121	73/10/ 8 8:44 73/10/ 8 19:21	10.62	0.400	0.038	0.25	5.95				0.011		
	120	73/10/ 8 9: 4 73/10/ 8 18:31	9.45	0.320	0.034	0.36	5.61				0.013		
	118	73/10/ 8 8:37 73/10/ 8 19:28	10.85	0.470	0.043	0.22	6.07				0.009		
27	123	73/10/23 15: 1 73/10/23 17:19	2.30	0.300	0.130	0.25	1.50	73/10/23 16:28 73/10/24 0:30	8.04	0.004	0.014	0.00	
	122	73/10/23 14:59 73/10/23 17:38	2.65	0.330	0.124	0.24	1.54				0.013		
	121	73/10/23 14:56 73/10/23 17:29	2.55	0.360	0.141	0.24	1.59				0.012		
	120	73/10/23 15: 2 73/10/23 17:53	2.85	0.320	0.112	0.22	1.48				0.013		
	119	73/10/23 14:59 73/10/23 17:44	2.75	0.360	0.131	0.19	1.54				0.012		
	118	73/10/23 15: 2 73/10/23 18: 1	2.98	0.320	0.107	0.27	1.48				0.013		

*** TABLE X -107. ***

```
                                   ******************************
                                   *     SUMMARY OF EVENTS      *
                                   ******************************
                                   *     CATCHMENT FILE : 80    *
                        **************************************************
                        * SALT LAKE CITY, UTAH. PARLEYS CANYON II.   (UT 1 3) *
                        **************************************************
                        *   STORM SEWERED AREA      CATCHMENT AREA   0.55 ACRES *
                        **************************************************


                              RAINFALL                                                  FLOW
                              --------                                                  ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION  VOLUME   RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)   COEFF.  FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                                  CFS
----   ----  ---------------    --------  ------  ----  ----   ----- ---------------    --------  ------   ------  ----  ----

  1    123     72/ 8/13 18: 0     0.60    0.140  0.234  0.23    2.86  72/ 8/13 20:45     0.57     0.536    3.830   1.05
               72/ 8/13 18:36                                          72/ 8/13 21:19

       120     72/ 8/13 18:15     0.50    0.100  0.200  0.20    2.61                                      5.362
               72/ 8/13 18:45

       119     72/ 8/13  0:20    18.17    0.230  0.013  0.36   20.53                                      2.331
               72/ 8/13 18:30

       118     72/ 8/13 18: 5     0.75    0.150  0.200  0.20    2.78                                      3.575
               72/ 8/13 18:50

  2    123     72/ 9/ 5 10:17    11.72    0.960  0.082  2.56    2.04  72/ 9/ 5 12:18     0.80     0.147    0.153   0.34
               72/ 9/ 5 22: 0                                         72/ 9/ 5 13: 6

       122     72/ 9/ 4 24: 0    19.25    1.060  0.055  2.32   12.32                                      0.139
               72/ 9/ 5 19:15

       121     72/ 9/ 5 10:44     9.34    0.930  0.100  1.66    1.59                                      0.158
               72/ 9/ 5 20: 4

       120     72/ 9/ 5 10:47     9.13    1.000  0.109  1.58    1.54                                      0.147
               72/ 9/ 5 19:55

       119     72/ 9/ 5  8:14    12.02    1.110  0.092  3.20    4.09                                      0.132
               72/ 9/ 5 20:15

       118     72/ 9/ 5  8: 3    11.87    1.000  0.084  2.32    4.27                                      0.147
               72/ 9/ 5 19:55

  3    123     72/ 9/18 17:55    10.09    0.500  0.050  0.36    7.77  72/ 9/19  1:40     3.57     0.458    0.915   0.32
               72/ 9/19  4: 0                                         72/ 9/19  5:14

       122     72/ 9/18 17:50     9.30    0.400  0.043  0.53    7.85                                      1.144
               72/ 9/19  3: 8

       121     72/ 9/18 20:30     8.00    0.440  0.055  0.77    5.18                                      1.040
               72/ 9/19  4:30

       120     72/ 9/18 17: 5    10.00    0.440  0.044  0.73    8.60                                      1.040
               72/ 9/19  3: 5

  4    123     72/ 9/19 15:50     0.25    0.100  0.400  0.40    0.07  72/ 9/19 15:52     0.10     0.013    0.128   0.14
               72/ 9/19 16: 5                                         72/ 9/19 15:58

       122     72/ 9/19 15:58     0.17    0.110  0.655  2.28   -0.07                                      0.117
               72/ 9/19 16: 8

       121     72/ 9/19 15:57     0.10    0.120  1.229  2.24   -0.05                                      0.107
               72/ 9/19 16: 3

       120     72/ 9/19 11: 5     5.08    0.180  0.035  1.10    4.82                                      0.071
               72/ 9/19 16:10
```

*** TABLE X -108. ***

```
****************************
* SUMMARY OF EVENTS(CONTINUED) *
****************************
*      CATCHMENT FILE : 80   *
**********************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON II.          (UT 1 3) *
**********************************************************
*    STORM SEWERED AREA          CATCHMENT AREA    0.55 ACRES *
**********************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
4	118	72/ 9/19 15:45 72/ 9/19 16: 0	0.25	0.110	0.440	0.44	0.15	72/ 9/19 15:52 72/ 9/19 15:58	0.10	0.013	0.117	0.14	
5	123	72/10/25 11:46 72/10/30 14:19	122.55	0.190	0.002	0.00	97.98	72/10/29 12: 5 72/10/29 15:48	3.71	3.577	18.827	0.92	
	122	72/10/29 17: 0 72/10/29 18:45	1.75	0.150	0.086	0.09	-3.25				23.848		
	120	72/10/29 14:30 72/10/29 19:25	4.91	0.160	0.033	0.03	-0.75				22.358		
6	123	73/ 5/25 4:15 73/ 5/25 21:30	17.25	1.400	0.081	1.20	0.10	73/ 5/25 4:15 73/ 5/25 20:10	15.92	0.572	0.408	0.38	
	122	73/ 5/25 4:25 73/ 5/25 21: 0	16.58	1.450	0.087	0.60	-0.07				0.394		
	121	73/ 5/25 4: 0 73/ 5/25 21:15	17.25	1.400	0.081	0.60	0.35				0.408		
	120	73/ 5/25 4:15 73/ 5/25 21:45	17.50	1.400	0.080	0.60	0.10				0.408		
	119	73/ 5/25 4:20 73/ 5/26 9: 0	28.67	0.870	0.030	0.60	0.02				0.657		
	118	73/ 5/25 4:30 73/ 5/25 21:15	16.75	1.400	0.084	1.80	-0.15				0.408		
7	123	73/ 6/ 1 16:45 73/ 6/ 1 18:15	1.50	0.300	0.200	0.60	1.20	73/ 6/ 1 17:17 73/ 6/ 1 18: 3	0.77	0.180	0.602	0.26	
	122	73/ 6/ 1 17: 0 73/ 6/ 1 18: 5	1.08	0.250	0.231	0.60	0.95				0.722		
	121	73/ 6/ 1 16:30 73/ 6/ 1 17:45	1.25	0.250	0.200	0.60	1.45				0.722		
	120	73/ 6/ 1 16:45 73/ 6/ 1 18:15	1.50	0.300	0.200	0.60	1.20				0.602		
	119	73/ 6/ 1 17: 0 73/ 6/ 1 18: 0	1.00	0.150	0.150	0.20	0.95				1.203		
8	123	73/ 7/13 11:18 73/ 7/13 11:45	0.45	0.200	0.441	0.77	0.23	73/ 7/13 11:23 73/ 7/13 13:10	1.78	0.442	2.210	0.62	
	122	73/ 7/13 11:18 73/ 7/13 11:41	0.38	0.230	0.601	1.05	0.23				1.922		
	121	73/ 7/13 10:40 73/ 7/13 11:11	0.52	0.170	0.330	0.61	0.87				2.600		

*** TABLE X -108. ***

* SUMMARY OF EVENTS(CONTINUED) *

* CATCHMENT FILE : 80 *

* SALT LAKE CITY, UTAH. PARLEYS CANYON II. (UT 1 3) *

* STORM SEWERED AREA CATCHMENT AREA 0.55 ACRES *

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
8	120	73/ 7/13 11:30 73/ 7/13 12:16	0.77	0.240	0.313	0.85	0.03	73/ 7/13 11:23 73/ 7/13 13:10	1.78	0.442	1.842	0.62	
	119	73/ 7/13 10:50 73/ 7/13 12: 1	1.18	0.280	0.237	0.37	0.70				1.579		
	118	73/ 7/13 10:58 73/ 7/13 12: 5	1.12	0.280	0.251	0.59	0.57				1.579		
9	123	73/ 7/13 20:47 73/ 7/13 21:52	1.08	1.030	0.952	9.60	0.13	73/ 7/13 20:43 73/ 7/13 21:51	1.13	0.095	0.092	0.44	
	122	73/ 7/13 20:48 73/ 7/13 21:16	0.47	0.900	1.920	2.95	0.12				0.106		
	121	73/ 7/13 20: 6 73/ 7/13 20:48	0.70	1.000	1.430	7.11	0.82				0.095		
	120	73/ 7/13 20:35 73/ 7/13 22: 8	1.55	1.180	0.761	4.80	0.33				0.081		
	119	73/ 7/13 20:21 73/ 7/13 21:21	1.00	0.940	0.940	2.95	0.57				0.101		
	118	73/ 7/13 20:21 73/ 7/13 21:27	1.10	0.900	0.817	2.95	0.57				0.106		
10	120	73/ 8/16 15:10 73/ 8/16 16:49	1.65	0.490	0.297	4.27	0.52	73/ 8/16 15:36 73/ 8/16 21: 0	5.40	2.718	5.548	3.20	
	119	73/ 8/16 15:40 73/ 8/16 16:53	1.22	0.480	0.394	9.60	0.02				5.663		
	118	73/ 8/16 15:35 73/ 8/16 15:55	0.33	0.480	1.446	10.88	0.10				5.663		
11	123	73/ 8/31 21:38 73/ 9/ 2 6:58	33.33	1.450	0.044	1.54	8.83	73/ 9/ 1 6:10 73/ 9/ 1 7:21	1.18	0.627	0.432	0.81	
	122	73/ 8/31 22:37 73/ 9/ 2 6:37	32.00	1.430	0.045	1.58	7.85				0.438		
	121	73/ 8/31 22: 1 73/ 9/ 2 7: 4	33.05	1.430	0.043	1.02	8.45				0.438		
	120	73/ 8/31 22:17 73/ 9/ 2 6:41	32.40	1.120	0.035	0.78	8.18				0.560		
	119	73/ 8/31 21:51 73/ 9/ 2 7:16	33.42	1.560	0.047	1.13	8.62				0.402		
	118	73/ 8/31 21:43 73/ 9/ 2 6:43	33.00	1.450	0.044	0.71	8.75				0.432		

*** TABLE X -108. ***

```
                 ********************************
                 * SUMMARY OF EVENTS(CONTINUED) *
                 ********************************
                 *       CATCHMENT FILE : 80    *
**************************************************************
* SALT LAKE CITY, UTAH. PARLEYS CANYON II.          (UT 1 3) *
**************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA    0.55 ACRES *
**************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
12	122	73/ 9/23 7:56 73/ 9/23 13:19	5.39	0.940	0.175	0.50	0.05	73/ 9/23 7:49 73/ 9/23 13:40	5.85	1.817	1.933	0.87	
	121	73/ 9/23 7:17 73/ 9/23 13:32	6.25	1.030	0.165	0.92	0.70				1.764		
	120	73/ 9/23 7:49 73/ 9/23 12:58	5.15	0.990	0.192	0.71	0.16				1.836		
	119	73/ 9/23 7:38 73/ 9/23 14: 8	6.50	1.100	0.169	0.77	0.35				1.652		
	118	73/ 9/23 7:41 73/ 9/23 12:57	5.27	1.040	0.197	0.71	0.30				1.747		
13	122	73/10/ 8 9:25 73/10/ 8 19:13	9.80	0.350	0.036	0.23	6.67	73/10/ 8 14:17 73/10/ 8 16:32	2.25	0.779	2.227	1.29	
	121	73/10/ 8 8:44 73/10/ 8 19:21	10.62	0.400	0.038	0.25	7.35				1.949		
	120	73/10/ 8 9: 4 73/10/ 8 18:31	9.45	0.320	0.034	0.36	7.02				2.436		
	118	73/10/ 8 8:37 73/10/ 8 15:14	6.62	0.380	0.057	0.22	7.47				2.051		
14	123	73/10/23 15: 1 73/10/23 17:19	2.30	0.300	0.130	0.25	0.32	73/10/23 15:13 73/10/23 17: 5	1.87	2.653	8.845	1.38	
	122	73/10/23 14:59 73/10/23 17:38	2.65	0.330	0.124	0.24	0.35				8.041		
	121	73/10/23 14:56 73/10/23 17:29	2.55	0.360	0.141	0.24	0.40				7.371		
	120	73/10/23 15: 2 73/10/23 17:53	2.85	0.320	0.112	0.22	0.30				8.292		
	119	73/10/23 14:59 73/10/23 17:44	2.75	0.360	0.131	0.19	0.35				7.371		
	118	73/10/23 15: 2 73/10/23 18: 1	2.98	0.320	0.107	0.27	0.30				8.292		

*** TABLE X -108. ***

```
                                             ******************************
                                             *      SUMMARY OF EVENTS     *
                                             ******************************
                                             *      CATCHMENT FILE : 81   *
                              **************************************************************
                              * FALLS CHURCH, VIRGINIA.  TRIPPS RUN.               (VA 1 1) *
                              **************************************************************
                              *   STORM SEWERED AREA         CATCHMENT AREA  322.00 ACRES *
                              **************************************************************



                                        RAINFALL                                                 FLOW
                                        --------                                                 ----

EVENT  RAIN  DATE(START-END)     DURATION  VOLUME   AVG   PEAK    BASIN DATE(START-END)     DURATION   VOLUME    RUNOFF    PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)    (INCH)   RAIN  RAIN    LAG   YR,MON,D,HR,MIN     (HRS)      (INCH)    COEFF.    FLOW  DAYS
                                                    IN/HR IN/HR   HRS                                                      CFS
----   ----  ---------------     --------  ------   ----  ----    ----- ---------------     --------   ------    ------    ----  ----


  1     129    63/ 6/29 19:50     5.33     2.756  0.517  2.10      4.00  63/ 6/29 18:30       7.50      0.848     0.308  225.00
               63/ 6/30  1:10                                            63/ 6/30  2: 0

  2     129    63/ 8/19 22:30    24.16     5.006  0.207  4.08     20.83  63/ 8/19 21:30      25.83      2.026     0.405  285.00
               63/ 8/20 22:40                                            63/ 8/20 23:20

  3     129    65/ 6/ 2 17:40     5.17     0.720  0.139  1.44     -0.45  65/ 6/ 2 16: 0       6.50      0.140     0.194   47.00
               65/ 6/ 2 22:50                                            65/ 6/ 2 22:30

  4     129    65/ 8/18 15:40   195.17     2.201  0.011  4.50    193.67  65/ 8/18 14:55     196.09      1.858     0.844  203.00
               65/ 8/26 18:50                                            65/ 8/26 19: 0

  5     129    65/10/ 7 12:20     6.67     3.127  0.469  2.10      5.67  65/10/ 7 11: 0      10.00      1.080     0.345  221.00
               65/10/ 7 19: 0                                            65/10/ 7 21: 0

  6     129    67/ 8/24 19:30     6.00     2.549  0.425  1.74      4.00  67/ 8/24 19: 0      10.00      2.398     0.941  312.00
               67/ 8/25  1:30                                            67/ 8/25  5: 0

  7     129    67/10/25 14:20     1.67     0.901  0.540  1.98      0.25  67/10/25 13: 0       5.00      0.210     0.233   61.70
               67/10/25 16: 0                                            67/10/25 18: 0
```

*** TABLE X -109. ***

```
                                    *******************************
                                    *       SUMMARY OF EVENTS     *
                                    *******************************
                                    *       CATCHMENT FILE : 82   *
                           ************************************************************
                           * SEATTLE, WASHINGTON. VIEW RIDGE 1(VR1).          (WA 1 1) *
                           ************************************************************
                           *    STORM SEWERED AREA         CATCHMENT AREA  630.00 ACRES *
                           ************************************************************


                               RAINFALL                                                  FLOW
                               --------                                                  ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK    BASIN DATE(START-END)  DURATION    VOLUME   RUNOFF    PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN    LAG   YR,MON,D,HR,MIN  (HRS)       (INCH)   COEFF.    FLOW  DAYS
                                                  IN/HR IN/HR   HRS                                                   CFS
-----  ----  ---------------    --------  ------  ----  ----    ----- ---------------  --------    ------   ------    ----  ----


  1    129     73/ 2/14 14: 5     4.50    0.070  0.016  0.04    1.03  73/ 2/14 13: 0     9.00      0.004    0.059    0.69
               73/ 2/14 18:35                                         73/ 2/14 22: 0

  2    129     73/ 3/16  9: 5     1.17    0.040  0.034  0.06    0.92  73/ 3/16  8: 0     4.75      0.010    0.245    5.20
               73/ 3/16 10:15                                         73/ 3/16 12:45

  3    129     73/ 6/ 6 12:30     3.33    0.131  0.039  0.09    1.00  73/ 6/ 6 12: 0     5.25      0.006    0.049    1.90
               73/ 6/ 6 15:50                                         73/ 6/ 6 17:15

  4    129     73/ 8/16 12:30     3.16    0.091  0.029  0.12    1.00  73/ 8/16 11:30     5.25      0.003    0.031    2.18
               73/ 8/16 15:40                                         73/ 8/16 16:45

  5    129     73/ 9/19 10: 5     9.17    0.280  0.031  0.24    3.17  73/ 9/19  9:45     9.50      0.019    0.067    3.14
               73/ 9/19 19:15                                         73/ 9/19 19:15

  6    129     74/10/20  2: 0     5.00    0.410  0.082  0.18    2.33  74/10/20  3:20     4.67      0.075    0.183   63.69 40.00
               74/10/20  7: 0                                         74/10/20  8: 0

  7    129     74/11/17  2:15    26.25    1.700  0.065  0.80    8.00  74/11/17  7:30     7.50      0.068    0.040   19.98  5.00
               74/11/18  4:30                                         74/11/17 15: 0

  8    129     75/ 2/11 24: 0    15.00    0.340  0.023  0.09   13.50  75/ 2/12 12:30     5.25      0.010    0.028    4.45  0.10
               75/ 2/12 15: 0                                         75/ 2/12 17:45

  9    129     75/ 2/13  2: 0    10.00    0.030  0.003  0.02    2.00  75/ 2/13  3:30     2.25      0.004    0.122    2.30  0.50
               75/ 2/13 12: 0                                         75/ 2/13  5:45

 10    129     75/ 2/13 16: 0     7.00    0.180  0.026  0.07    6.00  75/ 2/13 17:45     7.50      0.032    0.180   12.47  0.50
               75/ 2/13 23: 0                                         75/ 2/14  1:15

 11    129     75/ 2/15 12: 0    11.00    0.160  0.015  0.05    3.25  75/ 2/15 13:45     5.75      0.020    0.124    6.89  1.50
               75/ 2/15 23: 0                                         75/ 2/15 19:30

 12    129     75/ 8/22 13:30    22.75    1.040  0.046  2.20   18.00  75/ 8/23  7: 0     4.75      0.026    0.025   13.09
               75/ 8/23 12:15                                         75/ 8/23 11:45

 13    129     75/ 8/27 13: 0     8.00    0.140  0.017  0.04    5.25  75/ 8/27 14: 0     8.50      0.020    0.140    3.30  4.00
               75/ 8/27 21: 0                                         75/ 8/27 22:30

 14    129     75/ 9/16 15: 0     8.00    0.100  0.012  0.04    2.50  75/ 9/16 17: 0     7.75      0.021    0.211    4.10 15.00
               75/ 9/16 23: 0                                         75/ 9/17  0:45

 15    129     75/10/ 2 21: 0    10.25    0.330  0.032  0.28    6.00  75/10/ 3  0:30     7.75      0.038    0.115    8.83 16.00
               75/10/ 3  7:15                                         75/10/ 3  8:15

 16    129     75/10/ 5  6:45    13.25    0.980  0.074  0.16    7.50  75/10/ 5  6:30    13.50      0.094    0.096    7.36  1.20
               75/10/ 5 20: 0                                         75/10/ 5 20: 0

 17    129     75/10/ 8 24: 0    20.00    0.650  0.032  0.06   14.00  75/10/ 9  1: 0    28.75      0.146    0.225    6.45  3.50
               75/10/ 9 20: 0                                         75/10/10  5:45

 18    129     75/10/14 14: 0     7.00    0.120  0.017  0.03    2.75  75/10/14 15:30     6.50      0.019    0.160    3.29  4.80
               75/10/14 21: 0                                         75/10/14 22: 0


                                           *** TABLE X -110. ***
```

```
                                   ***********************************
                                   * SUMMARY OF EVENTS(CONTINUED) *
                                   ***********************************
                                   *        CATCHMENT FILE : 82    *
                    ********************************************************************
                    * SEATTLE, WASHINGTON. VIEW RIDGE 1(VR1).          (WA 1 1) *
                    ********************************************************************
                    *    STORM SEWERED AREA         CATCHMENT AREA  630.00 ACRES *
                    ********************************************************************


                             RAINFALL                                                FLOW
                             --------                                                ----

EVENT  RAIN  DATE(START-END)     DURATION   VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION    VOLUME   RUNOFF    PEAK  DRY
       GAGE  YR,MON,D,HR,MIN      (HRS)     (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)       (INCH)   COEFF.    FLOW  DAYS
                                                    IN/HR IN/HR  HRS                                                     CFS
-----  ----  ---------------     --------   ------  ----  ----   ----- ---------------    --------    ------   ------    ----  ----


  19   129     75/10/20 21: 0    13.00     0.340  0.026  0.04   13.00  75/10/20 22:45     13.25       0.078    0.230     6.23  1.80
               75/10/21 10: 0                                          75/10/21 12: 0

  20   129     75/10/21 14: 0     7.00     0.390  0.056  0.11    4.25  75/10/21 15: 0      9.75       0.048    0.124     6.45  0.20
               75/10/21 21: 0                                          75/10/22  0:45

  21   129     75/10/22  7: 0     2.00     0.130  0.065  0.13    5.50  75/10/21 24: 0     15.00       0.055    0.425    16.02  0.40
               75/10/22  9: 0                                          75/10/22 15: 0

  22   129     75/10/22 19: 0     3.00     0.240  0.080  0.21    2.25  75/10/22 21: 0     10.75       0.032    0.133     2.85  0.50
               75/10/22 22: 0                                          75/10/23  7:45

  23   129     75/10/24 18: 0     3.00     0.030  0.010  0.02   17.75  75/10/24 20: 0     16.75       0.052    1.742     2.85  1.90
               75/10/24 21: 0                                          75/10/25 12:45

  24   129     75/10/26  7: 0    16.00     0.340  0.021  0.09   13.00  75/10/26 10: 0     12.00       0.046    0.135     2.85  0.80
               75/10/26 23: 0                                          75/10/26 22: 0

  25   129     75/10/27  2: 0    17.00     0.360  0.021  0.17    9.25  75/10/27  1: 0     14.25       0.046    0.127     2.99  0.10
               75/10/27 19: 0                                          75/10/27 15:15

  26   129     75/11/13 12: 0    52.00     2.300  0.044  0.25   41.00  75/11/14 13:45     18.25       0.131    0.057     6.45  0.40
               75/11/15 16: 0                                          75/11/15  8: 0

  27   129     75/11/15 20: 0    10.00     0.710  0.071  0.18    7.75  75/11/15 21: 0     10.00       0.137    0.193    13.09  0.20
               75/11/16  6: 0                                          75/11/16  7: 0

  28   129     75/11/16 12: 0     4.00     0.090  0.022  0.06    2.25  75/11/16  7: 0     12.00       0.073    0.815    11.00  0.30
               75/11/16 16: 0                                          75/11/16 19: 0

  29   129     75/11/22  7: 0    13.00     0.520  0.040  0.14    8.25  75/11/22  7: 0     24.25       0.232    0.446     7.36  5.80
               75/11/22 20: 0                                          75/11/23  7:15

  30   129     75/12/ 7  2: 0    22.00     0.480  0.022  0.08    6.75  75/12/ 7  4: 0     23.75       0.125    0.260     6.67  2.70
               75/12/ 7 24: 0                                          75/12/ 8  3:45
```

*** TABLE X -110. ***

```
                   ***********************************
                   *      STATISTICAL SUMMARY        *
                   ***********************************
                   *       CATCHMENT FILE : 82       *
***************************************************************
* SEATTLE, WASHINGTON. VIEW RIDGE 1(VR1).          (WA 1 1) *
***************************************************************
*    STORM SEWERED AREA         CATCHMENT AREA  630.00 ACRES *
***************************************************************
```

	10 WATER TEMP CENT	70 TURB JKSN JTU	94 CNDUCTVY FIELD MICROMHO	300 DO MG/L	310 BOD 5 DAY MG/L	340 COD HI LEVEL MG/L	400 PH SU	515 RESIDUE DISS-105 C MG/L
MEAN............................	11.800	12.100	104.000	8.540	18.400	84.300	6.840	142.000
STANDARD DEVIATION..............	2.930	8.960	35.600	1.730	11.200	30.700	0.242	69.000
COEF. OF VARIATION..............	0.248	0.740	0.343	0.203	0.609	0.365	0.035	0.486
PARAMETER RANGE								
MIN...................	7.200	0.110	29.000	4.700	0.500	3.000	6.400	12.000
MAX...................	18.300	116.000	400.000	11.800	150.000	370.000	8.300	500.000
# OF EVENTS.....................	6	30	26	5	7	7	6	5
TOTAL FLOW VOLUME(INCH).........	0.174	1.599	1.541	0.034	0.177	0.177	0.164	0.034
TOTAL MASS LOAD(LBS)............	**********	**********	**********	41.400	464.000	2130.000	**********	689.000
CONCENTRATION(LBS/AC-IN)........	**********	**********	**********	1.940	4.170	19.100	**********	32.200

	530 RESIDUE TOT NFLT MG/L	546 RESIDUE SETTLBLE MG/L	552 GREASE HEX SOL MG/L	605 ORG N N MG/L	610 NH3-N TOTAL MG/L	615 NO2-N TOTAL MG/L	625 TOT KJEL N MG/L	630 NO2&NO3 N-TOTAL MG/L
MEAN............................	50.700	125.000	12.500	1.020	0.068	0.079	2.130	0.590
STANDARD DEVIATION..............	96.400	80.200	2.450	0.982	0.144	0.038	1.380	0.237
COEF. OF VARIATION..............	1.901	0.639	0.196	0.966	2.119	0.479	0.651	0.401
PARAMETER RANGE								
MIN...................	1.000	0.100	1.000	0.010	0.010	0.010	0.420	0.020
MAX...................	4800.000	440.000	55.000	9.990	2.200	0.220	15.000	4.300
# OF EVENTS.....................	30	7	7	22	30	5	5	30
TOTAL FLOW VOLUME(INCH).........	1.599	0.176	0.147	1.526	1.599	0.034	0.034	1.599
TOTAL MASS LOAD(LBS)............	11600.000	3150.000	262.000	221.000	15.500	0.381	10.300	135.000
CONCENTRATION(LBS/AC-IN)........	11.500	28.400	2.830	0.230	0.015	0.018	0.482	0.134

	665 PHOS-P P-WET MG/L	669 PHOS-T HYDRO MG/L P	940 CHLORIDE CL MG/L	945 SULFATE SO4 MG/L	1002 ARSENIC AS.TOT UG/L	1027 CADMIUM CD.TOT UG/L	1034 CHROMIUM CR.TOT UG/L	1042 COPPER CU.TOT UG/L
MEAN............................	0.255	0.369	7.680	18.900	51.400	4.030	18.800	23.600
STANDARD DEVIATION..............	0.236	0.194	4.200	8.210	3.850	0.265	19.800	14.800
COEF. OF VARIATION..............	0.928	0.525	0.547	0.434	0.075	0.066	1.051	0.627
PARAMETER RANGE								
MIN...................	0.050	0.100	1.000	1.000	49.000	0.400	9.000	10.000
MAX...................	4.440	3.000	25.000	34.000	100.000	10.000	100.000	230.000
# OF EVENTS.....................	25	5	5	5	3	28	7	7
TOTAL FLOW VOLUME(INCH).........	1.579	0.034	0.034	0.031	0.021	1.498	0.118	0.118
TOTAL MASS LOAD(LBS)............	57.400	1.790	37.200	84.400	0.155	0.861	0.316	0.397
CONCENTRATION(LBS/AC-IN)........	0.058	0.084	1.740	4.290	0.012	0.001	0.004	0.005

*** TABLE X -111. ***

```
                                   ******************************
                                   *     STATISTICAL SUMMARY    *
                                   ******************************
                                   *    CATCHMENT FILE : 82     *
                         ****************************************************
                         * SEATTLE, WASHINGTON. VIEW RIDGE 1(VR1).    (WA 1 1) *
                         ****************************************************
                         *   STORM SEWERED AREA    CATCHMENT AREA  630.00 ACRES *
                         ****************************************************

                                 1045        1051        1092       31501       31616       70507
                                 IRON        LEAD        ZINC      TOT COLI    FEC COLI    PHOS-T
                                 TOTAL       PB.TOT      ZN.TOT    MFIMENDO    MFM-FCBR    ORTHO
                                 UG/L        UG/L        UG/L      LN/100ML    LN/100ML    MG/L P
                               --------    --------    --------    --------    --------    --------
MEAN............................ 2020.000     137.000      69.500      10.200       9.020       0.069
STANDARD DEVIATION..............  831.000     128.000      46.300       9.500       8.650       0.060
COEF. OF VARIATION..............    0.412       0.934       0.666       0.514       0.692       0.873
PARAMETER RANGE
          MIN...................   90.000      20.000       5.000       6.190       3.910       0.010
          MAX................... 9600.000    3000.000     990.000      11.400      10.500       1.130
# OF EVENTS.....................        7          28          28           5           7          30
TOTAL FLOW VOLUME(INCH).........    0.117       1.498       1.498       0.034       0.118       1.613
TOTAL MASS LOAD(LBS)............   33.700      29.200      14.900      27.100      27.200      15.900
CONCENTRATION(LBS/AC-IN)........    0.457       0.031       0.016      24.000      22.900       0.016
```

*** TABLE X -111. ***

```
                                    ******************************
                                    *      SUMMARY OF EVENTS     *
                                    ******************************
                                    *      CATCHMENT FILE : 83   *
                    ******************************************************
                    * SEATTLE, WASHINGTON. VIEW RIDGE 2(VR2).     (WA 1 2) *
                    ******************************************************
                    *   STORM SEWERED AREA      CATCHMENT AREA  105.00 ACRES *
                    ******************************************************


                              RAINFALL                                                   FLOW
                              --------                                                   ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG    PEAK   BASIN DATE(START-END)    DURATION   VOLUME   RUNOFF   PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN    (HRS)      (INCH)   COEFF.   FLOW  DAYS
                                                  IN/HR  IN/HR  HRS                                                   CFS
-----  ----  ---------------    --------  ------  -----  -----  ----- ---------------    --------   ------   ------   ----  ----


  1    129    73/ 2/14 14:20     4.08     0.060   0.015  0.04    0.75  73/ 2/14 13:45     7.17      0.042    0.698    1.18
              73/ 2/14 18:25                                           73/ 2/14 20:55

  2    129    73/ 3/10  0: 5     6.08     0.313   0.052  0.24    1.67  73/ 3/10  0: 5     6.08      0.707    2.256   34.60
              73/ 3/10  6:10                                           73/ 3/10  6:10

  3    129    73/ 3/16  9: 5     1.08     0.047   0.043  0.12    1.08  73/ 3/16  7:37     5.30      0.079    1.685    6.86
              73/ 3/16 10:10                                           73/ 3/16 12:55

  4    129    73/ 8/16 12:30     3.16     0.090   0.028  0.12    1.25  73/ 8/16 10:55     5.84      0.027    0.300    2.67
              73/ 8/16 15:40                                           73/ 8/16 16:45

  5    129    73/ 9/19 10: 5     8.92     0.286   0.032  0.24    0.92  73/ 9/19  9:30     9.50      0.157    0.548    7.43
              73/ 9/19 19: 0                                           73/ 9/19 19: 0
```

*** TABLE X -112. ***

```
                                                ******************************
                                                *     STATISTICAL SUMMARY    *
                                                ******************************
                                                *     CATCHMENT FILE : 83    *
                                   ************************************************************
                                   * SEATTLE, WASHINGTON. VIEW RIDGE 2(VR2).          (VA 1 2) *
                                   ************************************************************
                                   *   STORM SEWERED AREA        CATCHMENT AREA  105.00 ACRES *
                                   ************************************************************

                                       10         70         94        300        310        340        400        515
                                     WATER       TURB     CNDUCTVY      DO        BOD        COD         PH      RESIDUE
                                      TEMP       JKSN      FIELD                 5 DAY     HI LEVEL             DISS-105
                                      CENT       JTU      MICROMHO     MG/L       MG/L       MG/L        SU      C MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................   10.200     26.700     95.400     10.800     12.900     62.400      7.340     84.200
STANDARD DEVIATION................    2.910      5.920     38.900      1.250      9.420     14.100      0.352     29.100
COEF. OF VARIATION................    0.285      0.221      0.408      0.116      0.730      0.227      0.048      0.346
PARAMETER RANGE
            MIN...................    8.000      1.900     50.000      5.700      1.000      3.000      6.400     46.000
            MAX...................   18.000     77.000    325.000     13.400    260.000    360.000      7.900    280.000
# OF EVENTS.......................        5          5          5          5          5          5          4          5
TOTAL FLOW VOLUME(INCH)...........    0.962      0.962      0.962      0.962      0.962      0.962      0.888      0.962
TOTAL MASS LOAD(LBS)..............**********  ********** **********   247.000    295.000   1430.000 **********  1930.000
CONCENTRATION(LBS/AC-IN)..........**********  ********** **********     2.450      2.930     14.100 **********    19.100

                                      530        546        552        610        615        625        630        669
                                    RESIDUE    RESIDUE     GREASE     NH3-N      NO2-N     TOT KJEL   NO2&NO3     PHOS-T
                                    TOT NFLT   SETTLBLE    HEX SOL    TOTAL      TOTAL        N       N-TOTAL     HYDRO
                                      MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L      MG/L P
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................  108.000     46.200     20.000      0.098      0.052      1.180      0.522      0.285
STANDARD DEVIATION................   33.200     23.000      6.960      0.119      0.033      0.776      0.210      0.099
COEF. OF VARIATION................    0.308      0.498      0.348      1.215      0.633      0.657      0.403      0.346
PARAMETER RANGE
            MIN...................    1.000      0.100      0.500      0.020      0.020      0.030      0.250      0.090
            MAX...................  470.000    480.000     40.000      1.600      0.230     10.100      2.400      2.600
# OF EVENTS.......................        4          5          5          5          5          5          5          5
TOTAL FLOW VOLUME(INCH)...........    0.921      0.962      0.962      0.962      0.962      0.962      0.962      0.962
TOTAL MASS LOAD(LBS).............. 2360.000   1060.000    458.000      2.230      1.190     27.000     11.900      6.520
CONCENTRATION(LBS/AC-IN)..........   24.400     10.500      4.540      0.022      0.012      0.267      0.118      0.065

                                      940        945       1002       1027       1034       1042       1045       1051
                                   CHLORIDE    SULFATE    ARSENIC    CADMIUM    CHROMIUM    COPPER      IRON       LEAD
                                       CL        SO4      AS.TOT     CD.TOT     CR.TOT     CU.TOT      TOTAL     PB.TOT
                                      MG/L       MG/L       UG/L       UG/L       UG/L       UG/L       UG/L       UG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN..............................    3.100      9.460     49.800      4.120      9.200     49.300    911.000    169.000
STANDARD DEVIATION................    3.160      6.110      0.387      0.116      0.401     30.500    844.000    117.000
COEF. OF VARIATION................    1.019      0.646      0.008      0.028      0.044      0.619      0.926      0.693
PARAMETER RANGE
            MIN...................    0.900      1.000     49.000      3.900      9.000     10.000    120.000    100.000
            MAX...................   62.000     39.000     50.000     11.000     10.000    200.000   7400.000   2500.000
# OF EVENTS.......................        4          5          2          5          5          5          5          5
TOTAL FLOW VOLUME(INCH)...........    0.921      0.843      0.144      0.962      0.962      0.962      0.962      0.962
TOTAL MASS LOAD(LBS)..............   68.000    190.000      0.170      0.094      0.211      1.130     20.900      3.870
CONCENTRATION(LBS/AC-IN)..........    0.703      2.140      0.011      0.001      0.002      0.011      0.206      0.038
```

*** TABLE X -113. ***

```
                                                ********************************
                                                *      STATISTICAL SUMMARY     *
                                                ********************************
                                                *       CATCHMENT FILE : 83    *
                                  *************************************************************
                                  * SEATTLE, WASHINGTON. VIEW RIDGE 2(VR2).          (VA 1 2) *
                                  *************************************************************
                                  *    STORM SEWERED AREA        CATCHMENT AREA  105.00 ACRES *
                                  *************************************************************


                                      1092       31501       31616       70507       71900
                                       ZINC   TOT COLI   FEC COLI      PHOS-T     MERCURY
                                     ZN.TOT   MFIMENDO   MFM-FCBR      ORTHO     HG.TOTAL
                                       UG/L   LN/100ML   LN/100ML      MG/L P        UG/L
                                   --------   --------   --------    --------    --------
MEAN...........................      52.000       9.740       8.680       0.060       0.280
STANDARD DEVIATION.............      48.500       9.260       7.950       0.043       0.041
COEF. OF VARIATION.............       0.934       0.615       0.480       0.729       0.147
PARAMETER RANGE
          MIN..................       5.000       7.240       3.400       0.030       0.100
          MAX..................     640.000      11.400      10.400       0.570       1.200
# OF EVENTS....................           5           5           5           5           5
TOTAL FLOW VOLUME(INCH)........       0.962       0.962       0.962       0.962       0.962
TOTAL MASS LOAD(LBS)...........       1.190      28.200      27.100       1.360       0.006
CONCENTRATION(LBS/AC-IN).......       0.012      23.600      22.500       0.014       0.000
```

*** TABLE X -113. ***

```
                           ***********************************
                           *        SUMMARY OF EVENTS        *
                           ***********************************
                           *        CATCHMENT FILE : 84      *
               *******************************************************
               * SEATTLE, WASHINGTON. SOUTH SEATTLE(SS3).    (WA 1 3) *
               *******************************************************
               *   STORM SEWERED AREA      CATCHMENT AREA  27.50 ACRES *
               *******************************************************


                           RAINFALL                                                 FLOW
                           --------                                                 ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG    PEAK   BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN   RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR  IN/HR  HRS                                              CFS
-----  ----  ---------------    --------  ------  -----  -----  ----- ---------------    --------  ------  ------  ----  ----


  1    129     73/ 3/10  0: 5     4.00    0.410   0.102  0.24    3.17  73/ 3/10  0: 5     7.58     0.256   0.626   2.94
               73/ 3/10  4: 5                                          73/ 3/10  7:40

  2    129     73/ 3/16 10:40     1.58    0.090   0.057  0.12   -0.92  73/ 3/16  7:49     4.92     0.018   0.202   0.27
               73/ 3/16 12:15                                          73/ 3/16 12:44

  3    129     73/ 6/ 6 12:25     3.75    0.162   0.043  0.12    0.42  73/ 6/ 6 11:10     7.33     0.040   0.247   0.65
               73/ 6/ 6 16:10                                          73/ 6/ 6 18:30

  4    129     73/ 8/16 12:25     3.09    0.062   0.020  0.12    3.09  73/ 8/16 11: 0     6.91     0.005   0.073   0.06
               73/ 8/16 15:30                                          73/ 8/16 17:55

  5    129     73/ 9/19  9:30     9.00    0.280   0.031  0.12    8.25  73/ 9/19  9:15     9.75     0.497   1.774   2.23
               73/ 9/19 18:30                                          73/ 9/19 19: 0

  6    129     74/10/20  2: 0     6.00    0.570   0.095  0.21    2.75  74/10/20  3:30     5.00     0.230   0.403   4.69 40.00
               74/10/20  8: 0                                          74/10/20  8:30

  7    129     74/11/17  6:15    22.00    1.250   0.057  0.48    4.00  74/11/17  7:15     7.75     0.284   0.227   4.39  5.00
               74/11/18  4:15                                          74/11/17 15: 0

  8    129     75/ 2/11 24: 0    22.00    0.480   0.022  0.11   14.50  75/ 2/12 11:15     7.25     0.018   0.037   0.31  0.20
               75/ 2/12 22: 0                                          75/ 2/12 18:30

  9    129     75/ 2/13  2: 0     9.00    0.310   0.034  0.04    2.25  75/ 2/13  3:15     4.25     0.009   0.030   0.12  0.60
               75/ 2/13 11: 0                                          75/ 2/13  7:30

 10    129     75/ 2/13 11: 0    12.00    0.180   0.015  0.07    9.50  75/ 2/13 12:15    14.50     0.073   0.404   1.11  0.30
               75/ 2/13 23: 0                                          75/ 2/14  2:45

 11    129     75/ 2/15 13: 0     9.00    0.300   0.033  0.05    3.50  75/ 2/15 13:15     7.75     0.045   0.151   0.43  1.50
               75/ 2/15 22: 0                                          75/ 2/15 21: 0

 12    129     75/ 2/23 15:30     5.00    0.420   0.084  0.20    2.00  75/ 2/23 16:15     6.25     0.116   0.276   1.87  3.50
               75/ 2/23 20:30                                          75/ 2/23 22:30

 13    129     75/ 3/ 8 18: 0     5.00    0.280   0.056  0.12    4.75  75/ 3/ 8 19:15     7.25     0.067   0.239   1.03  6.00
               75/ 3/ 8 23: 0                                          75/ 3/ 9  2:30

 14    129     75/ 4/14 18: 0     4.00    0.080   0.020  0.03    3.25  75/ 4/14 19:45     4.25     0.024   0.305   0.36  2.40
               75/ 4/14 22: 0                                          75/ 4/14 24: 0

 15    129     75/ 6/17  1: 0    10.00    0.160   0.016  0.05    4.50  75/ 6/17  2:45    10.75     0.191   1.195   0.88 13.00
               75/ 6/17 11: 0                                          75/ 6/17 13:30

 16    129     75/ 6/24  7: 0     6.00    0.200   0.033  0.10    2.25  75/ 6/24  8: 0     6.00     0.178   0.889   2.68  1.10
               75/ 6/24 13: 0                                          75/ 6/24 14: 0

 17    129     75/ 8/27 13: 0     8.00    0.150   0.019  0.05    7.75  75/ 8/27 16: 0     7.25     0.140   0.934   1.58  4.20
               75/ 8/27 21: 0                                          75/ 8/27 23:15

 18    129     75/10/ 3  1: 0     2.50    0.210   0.084  0.32    1.75  75/10/ 3  0:15     7.00     0.183   0.874   3.23 36.00
               75/10/ 3  3:30                                          75/10/ 3  7:15

                                        ***  TABLE X -114. ***
```

```
                              ********************************
                              * SUMMARY OF EVENTS(CONTINUED) *
                              ********************************
                              *       CATCHMENT FILE : 84    *
                   ****************************************************
                   * SEATTLE, WASHINGTON. SOUTH SEATTLE(SS3).   (WA 1 3) *
                   ****************************************************
                   *    STORM SEWERED AREA        CATCHMENT AREA   27.50 ACRES *
                   ****************************************************


                       RAINFALL                                                   FLOW
                       --------                                                   ----

EVENT RAIN DATE(START-END)   DURATION VOLUME  AVG  PEAK  BASIN DATE(START-END)  DURATION  VOLUME  RUNOFF  PEAK DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH)  RAIN RAIN  LAG   YR,MON,D,HR,MIN  (HRS)     (INCH)  COEFF.  FLOW DAYS
                                              IN/HR IN/HR HRS                                             CFS
----- ---- ---------------  -------- ------ ----- ----- ----- --------------- --------  ------  ------  ---- ----

 19   129  75/10/ 3 15:45     4.25   0.205 0.048  0.12   3.50 75/10/ 3 15: 0    8.00    0.230   1.124   2.51 0.60
           75/10/ 3 20: 0                                     75/10/ 3 23: 0

 20   129  75/10/ 5  5: 0    11.25   0.580 0.052  0.16   6.00 75/10/ 5  7:15   13.50    0.477   0.822   2.39 1.50
           75/10/ 5 16:15                                     75/10/ 5 20:45

 21   129  75/10/14 14: 0     8.00   0.140 0.017  0.04   5.00 75/10/14 15:30    8.00    0.110   0.782   0.56 4.80
           75/10/14 22: 0                                     75/10/14 23:30

 22   129  75/10/24 18: 0    10.00   0.110 0.011  0.02  14.25 75/10/24 20: 0   18.75    0.240   2.183   1.23 1.90
           75/10/25  4: 0                                     75/10/25 14:45

 23   129  75/10/26  1: 0    35.00   0.610 0.017  0.08  16.25 75/10/26 11: 0   15.00    0.304   0.498   1.72 0.30
           75/10/27 12: 0                                     75/10/27  2: 0

 24   129  75/10/27 15: 0     4.00   0.120 0.030  0.07   1.25 75/10/27 15: 0    9.75    0.122   1.013   2.17 0.10
           75/10/27 19: 0                                     75/10/28  0:45

 25   129  75/11/13 13: 0    22.00   1.050 0.048  0.16   6.50 75/11/13 12:30   24.00    0.921   0.877   3.43 5.20
           75/11/14 11: 0                                     75/11/14 12:30

 26   129  75/11/14 15: 0    16.00   0.510 0.032  0.24  10.00 75/11/14 16: 0   16.00    0.426   0.834   4.18 0.20
           75/11/15  7: 0                                     75/11/15  8: 0

 27   129  75/11/22  5: 0    17.00   0.440 0.026  0.11  10.25 75/11/22  6:45   23.50    0.463   1.053   4.25 5.50
           75/11/22 22: 0                                     75/11/23  6:15

 28   129  75/12/ 7  4: 0     9.00   0.370 0.041  0.08   4.25 75/12/ 7  5:15    9.50    0.367   0.992   4.10 2.70
           75/12/ 7 13: 0                                     75/12/ 7 14:45

 29   129  75/12/ 7 15: 0    15.00   0.090 0.006  0.02   3.25 75/12/ 7 16:45   10.25    0.115   1.279   0.59 0.10
           75/12/ 8  6: 0                                     75/12/ 8  3: 0
```

*** TABLE X -114. ***

```
                                                    ****************************************
                                                    *         STATISTICAL SUMMARY          *
                                                    ****************************************
                                                    *         CATCHMENT FILE : 84          *
                                    ****************************************************************
                                    * SEATTLE, WASHINGTON. SOUTH SEATTLE(SS3).            (WA 1 3) *
                                    ****************************************************************
                                    *    STORM SEWERED AREA          CATCHMENT AREA   27.50 ACRES *
                                    ****************************************************************

                                          10          70          94         300         310         340         400         515
                                       WATER        TURB    CNDUCTVY          DO         BOD         COD          PH     RESIDUE
                                        TEMP        JKSN       FIELD                   5 DAY    HI LEVEL                DISS-105
                                        CENT         JTU    MICROMHO        MG/L        MG/L        MG/L          SU      C MG/L
                                    --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................      13.700      23.200      60.400       8.840      11.900      86.800       6.760     141.000
STANDARD DEVIATION..............       4.360      14.800      43.100       1.820       8.160      38.700       0.446      10.400
COEF. OF VARIATION..............       0.318       0.639       0.713       0.206       0.684       0.445       0.066       0.074
PARAMETER RANGE
         MIN....................       7.100       0.710      13.000       4.000       0.500       5.000       6.000      26.000
         MAX....................      23.000     220.000     500.000      16.000      88.000     340.000       7.800     340.000
# OF EVENTS.....................           7          28          23           5           7           7           7           4
TOTAL FLOW VOLUME(INCH).........       1.060       5.645       5.389       0.764       1.264       1.278       1.278       0.514
TOTAL MASS LOAD(LBS)............  **********  **********  **********      42.100      94.000     691.000  **********     450.000
CONCENTRATION(LBS/AC-IN)........  **********  **********  **********       2.000       2.700      19.700  **********      31.900

                                         530         546         552         605         610         615         625         630
                                     RESIDUE     RESIDUE      GREASE       ORG N       NH3-N       NO2-N    TOT KJEL     NO2&NO3
                                    TOT NFLT    SETTLBLE     HEX SOL           N       TOTAL       TOTAL           N     N-TOTAL
                                        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                    --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................     114.000     151.000      12.400       0.710       0.137       0.062       2.090       0.379
STANDARD DEVIATION..............     176.000     151.000       2.780       0.514       0.144       0.001       0.263       0.476
COEF. OF VARIATION..............       1.543       0.998       0.223       0.724       1.053       0.012       0.126       1.257
PARAMETER RANGE
         MIN....................       1.000       0.100       2.800       0.010       0.010       0.010       0.250       0.030
         MAX....................    2980.000    1270.000     100.000       9.990       4.190       0.160       7.100       4.600
# OF EVENTS.....................          29           6           6          22          28           4           4          28
TOTAL FLOW VOLUME(INCH).........       5.891       1.018       0.891       5.045       5.641       0.514       0.514       5.645
TOTAL MASS LOAD(LBS)............    4190.000     961.000      69.000      22.300       4.830       0.198       6.680      13.300
CONCENTRATION(LBS/AC-IN)........      25.900      34.300       2.820       0.161       0.031       0.014       0.473       0.086

                                         665         669         940         945        1002        1027        1034        1042
                                      PHOS-P      PHOS-T    CHLORIDE     SULFATE     ARSENIC     CADMIUM    CHROMIUM      COPPER
                                       P-WET       HYDRO          CL         SO4      AS.TOT      CD.TOT      CR.TOT      CU.TOT
                                        MG/L      MG/L P        MG/L        MG/L        UG/L        UG/L        UG/L        UG/L
                                    --------    --------    --------    --------    --------    --------    --------    --------
MEAN............................       0.241       0.135       3.510      43.800      50.000       4.950      18.000     120.000
STANDARD DEVIATION..............       0.152       0.047       5.790       6.300       1.510       1.570      11.400      97.000
COEF. OF VARIATION..............       0.630       0.348       1.649       0.144       0.030       0.317       0.631       0.809
PARAMETER RANGE
         MIN....................       0.010       0.040       0.900       2.000      40.000       3.900       9.000       4.000
         MAX....................       2.620       0.900      84.000      78.000     100.000      40.000      90.000     400.000
# OF EVENTS.....................          24           4           5           4           3          27           7           7
TOTAL FLOW VOLUME(INCH).........       5.207       0.514       0.764       0.491       0.491       5.731       1.278       1.278
TOTAL MASS LOAD(LBS)............       7.830       0.430      16.700     134.000       0.153       0.177       0.143       0.955
CONCENTRATION(LBS/AC-IN)........       0.055       0.031       0.796       9.910       0.011       0.001       0.004       0.027
```

*** TABLE X -115. ***

```
                                         *******************************
                                         *     STATISTICAL SUMMARY     *
                                         *******************************
                                         *      CATCHMENT FILE : 84    *
                               **************************************************
                               * SEATTLE, WASHINGTON. SOUTH SEATTLE(SS3).       (WA 1 3) *
                               **************************************************
                               *   STORM SEWERED AREA       CATCHMENT AREA   27.50 ACRES *
                               **************************************************

                                    1045       1051       1092      31501      31616      70507
                                    IRON       LEAD       ZINC    TOT COLI   FEC COLI    PHOS-T
                                    TOTAL      PB.TOT     ZN.TOT  MFIMENDO   MFM-FCBR    ORTHO
                                    UG/L       UG/L       UG/L    LN/100ML   LN/100ML    MG/L P
                                  --------   --------   --------  --------   --------   --------
MEAN...........................   4240.000    225.000    234.000     9.340      6.180      0.052
STANDARD DEVIATION.............   3090.000    154.000    134.000     8.070      5.780      0.038
COEF. OF VARIATION.............      0.730      0.682      0.574     0.281      0.669      0.724
PARAMETER RANGE
          MIN..................    220.000     11.000     17.000     1.390      0.693      0.010
          MAX..................  26000.000   1360.000   2300.000    10.500      7.440      0.960
# OF EVENTS....................          6         27         27         4          6         28
TOTAL FLOW VOLUME(INCH)........      1.023      5.731      5.731     0.514      0.987      5.705
TOTAL MASS LOAD(LBS)...........     27.000      8.040      8.370    25.800     23.300      1.850
CONCENTRATION(LBS/AC-IN).......      0.960      0.051      0.053    23.200     20.000      0.012
```

*** TABLE X -115. ***

```
                   ********************************
                   *       SUMMARY OF EVENTS      *
                   ********************************
                   *      CATCHMENT FILE : 85     *
***********************************************************************
* SEATTLE, WASHINGTON. SOUTH CENTER(SC4).                 (WA 1 4) *
***********************************************************************
*    STORM SEWERED AREA          CATCHMENT AREA    24.00 ACRES *
***********************************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	73/ 2/14 14: 5 73/ 2/14 18:40	4.58	0.119	0.026	0.12	4.42	73/ 2/14 14: 5 73/ 2/14 22: 0	7.92	0.020	0.170	0.11	
2	129	73/ 3/10 0:10 73/ 3/10 4:30	4.33	0.418	0.097	0.20	1.08	73/ 3/ 9 23: 5 73/ 3/10 6:30	7.42	0.300	0.718	3.00	
3	129	73/ 6/ 6 12:15 73/ 6/ 6 16:25	4.17	0.260	0.062	0.24	0.50	73/ 6/ 6 11:45 73/ 6/ 6 18:45	7.00	0.180	0.692	1.79	
4	129	73/ 8/16 13:45 73/ 8/16 15:35	1.83	0.060	0.033	0.06	0.50	73/ 8/16 12:15 73/ 8/16 19:55	7.66	0.092	1.532	1.97	
5	129	73/ 9/19 9:15 73/ 9/19 17:35	8.33	0.322	0.039	0.20	1.25	73/ 9/19 8:30 73/ 9/19 19:30	11.00	0.227	0.706	1.59	
6	129	74/10/20 3: 0 74/10/20 9: 0	6.00	0.330	0.055	0.14	2.25	74/10/20 3:45 74/10/20 8:30	4.75	0.059	0.178	0.58	40.00
7	129	74/11/17 5:45 74/11/18 1: 0	19.25	0.540	0.028	0.28	4.00	74/11/17 7:15 74/11/17 17:15	10.00	0.245	0.453	1.75	5.00
8	129	75/ 2/13 2: 0 75/ 2/14 2: 0	24.00	0.200	0.008	0.07	21.00	75/ 2/13 11:45 75/ 2/14 6:15	18.50	0.105	0.527	1.55	0.30
9	129	75/ 2/15 12: 0 75/ 2/15 23: 0	11.00	0.250	0.023	0.06	3.25	75/ 2/15 12:15 75/ 2/15 21:15	9.00	0.165	0.659	1.55	1.50
10	129	75/ 2/23 16: 0 75/ 2/23 22: 0	6.00	0.390	0.065	0.18	3.50	75/ 2/23 16:30 75/ 2/24 3:15	10.75	0.253	0.648	1.82	3.50
11	129	75/ 2/28 1:45 75/ 2/28 8: 0	6.25	0.340	0.054	0.20	4.25	75/ 2/28 2:15 75/ 2/28 16:15	14.00	0.304	0.894	1.98	0.30
12	129	75/ 3/ 1 5: 0 75/ 3/ 2 7: 0	26.00	0.930	0.036	0.09	23.25	75/ 3/ 1 1: 0 75/ 3/ 2 9:15	32.25	0.883	0.949	1.98	0.50
13	129	75/ 4/ 1 24: 0 75/ 4/ 2 17: 0	17.00	0.360	0.021	0.09	6.50	75/ 4/ 2 0:45 75/ 4/ 2 8:30	7.75	0.134	0.372	1.08	1.50
14	129	75/ 4/14 17: 0 75/ 4/14 22: 0	5.00	0.070	0.014	0.03	3.50	75/ 4/14 19:15 75/ 4/15 1: 0	5.75	0.073	1.049	0.83	6.00
15	129	75/ 5/ 2 24: 0 75/ 5/ 3 18: 0	18.00	0.200	0.011	0.09	14.50	75/ 5/ 3 12:30 75/ 5/ 3 22:30	10.00	0.058	0.292	0.61	0.50
16	129	75/ 5/10 15: 0 75/ 5/10 23: 0	8.00	0.230	0.029	0.07	2.75	75/ 5/10 15:30 75/ 5/10 19:45	4.25	0.047	0.202	0.64	6.20
17	129	75/ 6/22 24: 0 75/ 6/23 5: 0	5.00	0.040	0.008	0.01	1.25	75/ 6/23 0:45 75/ 6/23 6:45	6.00	0.039	0.976	0.31	5.70
18	129	75/ 8/ 8 9: 0 75/ 8/ 8 20: 0	11.00	0.080	0.007	0.03	11.25	75/ 8/ 8 16:45 75/ 8/ 8 22: 0	5.25	0.021	0.267	0.72	11.50

*** TABLE X -116. ***

```
                                  ********************************
                                  * SUMMARY OF EVENTS(CONTINUED) *
                                  ********************************
                                  *       CATCHMENT FILE : 85    *
                         ****************************************************
                         * SEATTLE, WASHINGTON. SOUTH CENTER(SC4).   (WA 1 4) *
                         ****************************************************
                         *    STORM SEWERED AREA     CATCHMENT AREA  24.00 ACRES *
                         ****************************************************



                           RAINFALL                                       FLOW
                           --------                                       ----

EVENT RAIN DATE(START-END)   DURATION VOLUME  AVG   PEAK  BASIN DATE(START-END)  DURATION  VOLUME  RUNOFF  PEAK DRY
      GAGE YR,MON,D,HR,MIN    (HRS)   (INCH)  RAIN  RAIN  LAG   YR,MON,D,HR,MIN  (HRS)     (INCH)  COEFF.  FLOW DAYS
                                              IN/HR IN/HR HRS                                              CFS
----- ---- ---------------  -------- ------ ----- ----  ----- ---------------  --------  ------  ------  ---- ----


  19   129   75/ 8/22 12: 0   4.00    0.090 0.022 0.05   3.00 75/ 8/22 14: 0    4.00    0.030   0.332   0.51 4.00
             75/ 8/22 16: 0                                   75/ 8/22 18: 0

  20   129   75/ 8/22 21: 0   2.00    0.020 0.010 0.02   1.75 75/ 8/22 22:15    2.50    0.011   0.571   0.25 0.30
             75/ 8/22 23: 0                                   75/ 8/23  0:45

  21   129   75/ 8/26 12:45  34.25    1.260 0.037 0.52  32.25 75/ 8/27 14:15    7.75    0.246   0.195   2.53 4.00
             75/ 8/27 23: 0                                   75/ 8/27 22: 0

  22   129   75/ 8/27 24: 0  34.00    0.801 0.024 0.10   2.25 75/ 8/28  1:15    5.75    0.050   0.063   1.59 0.40
             75/ 8/29 10: 0                                   75/ 8/28  7: 0

  23   129   75/10/ 2 24: 0   6.25    0.220 0.035 0.28   3.00 75/10/ 3  0:45    5.50    0.141   0.639   1.63
             75/10/ 3  6:15                                   75/10/ 3  6:15

  24   129   75/10/ 5  6:45  15.50    0.970 0.063 0.20   5.00 75/10/ 5  8:45   12.00    0.543   0.559   1.71 1.40
             75/10/ 5 22:15                                   75/10/ 5 20:45

  25   129   75/10/24 18: 0   9.00    0.100 0.011 0.02  16.25 75/10/24 20: 0   25.25    0.500   5.002   1.39 1.90
             75/10/25  3: 0                                   75/10/25 21:15

  26   129   75/10/26 24: 0  26.00    0.450 0.017 0.14  15.75 75/10/27 15:30   10.50    0.186   0.412   1.39 0.20
             75/10/28  2: 0                                   75/10/28  2: 0

  27   129   75/10/28  3: 0  20.00    0.560 0.028 0.10   6.50 75/10/28  2: 0   10.50    0.128   0.229   0.99 0.20
             75/10/28 23: 0                                   75/10/28 12:30

  28   129   75/11/13 12: 0  26.00    1.390 0.053 0.20  11.50 75/11/13 13:45   25.25    1.161   0.835   2.58 5.10
             75/11/14 14: 0                                   75/11/14 15: 0

  29   129   75/11/14 14: 0  40.00    0.990 0.025 0.19  10.75 75/11/14 15:15   19.50    0.551   0.556   3.06 0.40
             75/11/16  6: 0                                   75/11/15 10:45
```

*** TABLE X -116. ***

```
************************************
*      STATISTICAL SUMMARY         *
************************************
*       CATCHMENT FILE : 85        *
******************************************************
* SEATTLE, WASHINGTON. SOUTH CENTER(SC4).     (WA 1 4) *
******************************************************
*   STORM SEWERED AREA      CATCHMENT AREA   24.00 ACRES *
******************************************************
```

	10 WATER TEMP CENT	70 TURB JKSN JTU	94 CNDUCTVY FIELD MICROMHO	300 DO MG/L	310 BOD 5 DAY MG/L	340 COD HI LEVEL MG/L	400 PH SU	515 RESIDUE DISS-105 C MG/L
MEAN	13.000	11.600	62.400	9.580	12.500	62.300	6.520	48.400
STANDARD DEVIATION	4.630	5.550	38.800	1.310	7.700	26.000	0.444	35.100
COEF. OF VARIATION	0.355	0.478	0.622	0.137	0.618	0.417	0.068	0.726
PARAMETER RANGE								
MIN	7.600	0.890	11.000	6.000	1.000	8.000	5.600	1.000
MAX	19.200	120.000	1530.000	11.900	230.000	870.000	7.500	510.000
# OF EVENTS	7	27	23	5	7	7	7	5
TOTAL FLOW VOLUME(INCH)	1.081	6.283	5.722	0.778	1.080	1.081	1.081	0.778
TOTAL MASS LOAD(LBS)	**********	**********	**********	40.500	73.200	366.000	**********	205.000
CONCENTRATION(LBS/AC-IN)	**********	**********	**********	2.170	2.820	14.100	**********	11.000

	530 RESIDUE TOT NFLT MG/L	546 RESIDUE SETTLBLE MG/L	552 GREASE HEX SOL MG/L	605 ORG N N MG/L	610 NH3-N TOTAL MG/L	615 NO2-N TOTAL MG/L	625 TOT KJEL N MG/L	630 NO2&NO3 N-TOTAL MG/L
MEAN	43.400	50.800	11.500	0.535	0.097	0.030	1.290	0.232
STANDARD DEVIATION	34.400	37.000	4.840	0.375	0.198	0.013	0.791	0.313
COEF. OF VARIATION	0.794	0.728	0.421	0.702	2.054	0.433	0.613	1.351
PARAMETER RANGE								
MIN	1.000	0.100	1.000	0.010	0.010	0.010	0.250	0.010
MAX	1200.000	1100.000	130.000	18.000	3.400	0.130	7.700	9.990
# OF EVENTS	27	6	7	21	28	5	5	28
TOTAL FLOW VOLUME(INCH)	6.243	0.878	0.968	5.372	6.322	0.778	0.778	6.322
TOTAL MASS LOAD(LBS)	1470.000	242.000	60.500	15.600	3.320	0.127	5.460	7.970
CONCENTRATION(LBS/AC-IN)	9.830	11.500	2.600	0.121	0.022	0.007	0.293	0.053

	665 PHOS-P P-WET MG/L	669 PHOS-T HYDRO MG/L P	940 CHLORIDE CL MG/L	945 SULFATE SO4 MG/L	1002 ARSENIC AS.TOT UG/L	1027 CADMIUM CD.TOT UG/L	1034 CHROMIUM CR.TOT UG/L	1042 COPPER CU.TOT UG/L
MEAN	0.184	0.149	3.130	12.300	48.600	20.700	105.000	70.200
STANDARD DEVIATION	0.098	0.060	3.250	5.280	2.880	79.400	160.000	91.500
COEF. OF VARIATION	0.534	0.404	1.038	0.428	0.059	3.837	1.529	1.303
PARAMETER RANGE								
MIN	0.010	0.030	0.900	4.000	45.000	0.600	9.000	10.000
MAX	4.500	0.700	65.000	138.000	70.000	7010.000	11000.000	310.000
# OF EVENTS	24	4	5	5	3	24	7	7
TOTAL FLOW VOLUME(INCH)	5.752	0.759	0.778	0.777	0.469	5.918	1.081	1.081
TOTAL MASS LOAD(LBS)	5.760	0.617	13.300	52.100	0.124	0.666	0.616	0.413
CONCENTRATION(LBS/AC-IN)	0.042	0.034	0.710	2.790	0.011	0.005	0.024	0.016

*** TABLE X -117. ***

```
                                        ******************************
                                        *    STATISTICAL SUMMARY     *
                                        ******************************
                                        *    CATCHMENT FILE : 85     *
                         **********************************************************
                         * SEATTLE, WASHINGTON. SOUTH CENTER(SC4).        (WA 1 4) *
                         **********************************************************
                         *   STORM SEWERED AREA       CATCHMENT AREA   24.00 ACRES *
                         **********************************************************


                                        1045        1051        1092       31501       31616       70507
                                        IRON        LEAD        ZINC    TOT COLI    FEC COLI      PHOS-T
                                       TOTAL      PB.TOT      ZN.TOT    MFIMENDO    MFM-FCBR       ORTHO
                                        UG/L        UG/L        UG/L    LN/100ML    LN/100ML      MG/L P
                                    --------    --------    --------    --------    --------    --------
MEAN............................     804.000     233.000     135.000       7.880       4.200       0.045
STANDARD DEVIATION..............     950.000     176.000     126.000       7.970       4.050       0.053
COEF. OF VARIATION..............       1.182       0.755       0.931       1.094       0.859       1.172
PARAMETER RANGE
          MIN...................      20.000       6.670      10.000       3.400       0.693       0.010
          MAX...................   17000.000    2720.000    1680.000      10.200       7.000       6.140
# OF EVENTS.....................           7          24          23           5           7          29
TOTAL FLOW VOLUME(INCH).........       1.081       5.920       5.901       0.778       1.081       6.530
TOTAL MASS LOAD(LBS)............       4.730       7.500       4.340      24.600      21.300       1.600
CONCENTRATION(LBS/AC-IN)........       0.182       0.053       0.031      21.700      18.000       0.010
```

*** TABLE X -117. ***

```
            ******************************
            *      SUMMARY OF EVENTS     *
            ******************************
            *     CATCHMENT FILE : 86    *
*****************************************************
* SEATTLE, WASHINGTON. LAKE HILLS(LHS).    (WA 1 5) *
*****************************************************
*  STORM SEWERED AREA      CATCHMENT AREA 150.00 ACRES *
*****************************************************
```

			RAINFALL						FLOW				
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	73/ 3/10 0: 5 73/ 3/10 4:55	4.83	0.380	0.079	0.12	1.92	73/ 3/10 0: 5 73/ 3/10 8: 0	7.92	0.096	0.252	4.10	
2	129	73/ 3/16 9:55 73/ 3/16 11: 5	1.17	0.050	0.043	0.12	0.67	73/ 3/16 8: 5 73/ 3/16 13:45	5.67	0.017	0.339	1.74	
3	129	73/ 6/ 6 12:35 73/ 6/ 6 16: 5	3.50	0.265	0.076	0.24	2.42	73/ 6/ 6 12:30 73/ 6/ 6 17:46	5.27	0.010	0.036	0.54	
4	129	73/ 8/16 14:50 73/ 8/16 15:55	1.08	0.040	0.037	0.06	0.42	73/ 8/16 13: 0 73/ 8/16 21: 0	8.00	0.011	0.275	0.66	
5	129	73/ 9/19 10:15 73/ 9/19 19: 5	8.83	0.249	0.028	0.16	7.25	73/ 9/19 10: 0 73/ 9/19 20:30	10.50	0.040	0.160	1.88	
6	129	75/ 4/22 18: 0 75/ 4/23 5: 0	11.00	0.120	0.011	0.03	10.00	75/ 4/22 19:15 75/ 4/23 5:45	10.50	0.004	0.037	0.44	4.40
7	129	75/ 6/24 0:30 75/ 6/24 11: 0	10.50	0.350	0.033	0.20	7.75	75/ 6/24 7:45 75/ 6/24 13:30	5.75	0.023	0.067	2.55	1.00

*** TABLE X -118. ***

```
                                                     ***************************
                                                     *    STATISTICAL SUMMARY  *
                                                     ***************************
                                                     *    CATCHMENT FILE : 86  *
                                        *******************************************************
                                        * SEATTLE, WASHINGTON. LAKE HILLS(LH5).       (WA 1 5) *
                                        *******************************************************
                                        *   STORM SEWERED AREA       CATCHMENT AREA  150.00 ACRES *
                                        *******************************************************

                                          10          70          94         300         310         340         400         515
                                        WATER        TURB     CNDUCTVY        DO         BOD         COD          PH     RESIDUE
                                         TEMP        JKSN       FIELD                  5 DAY    HI LEVEL              DISS-105
                                         CENT         JTU    MICROMHO       MG/L        MG/L        MG/L          SU    C MG/L
                                     --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................     12.100      11.200      40.900      10.300       6.310      44.000       7.380      71.500
STANDARD DEVIATION................      4.560       6.560      13.000       1.130       2.850      20.200       0.430       9.600
COEF. OF VARIATION................      0.376       0.584       0.319       0.111       0.452       0.458       0.058       0.134
PARAMETER RANGE
          MIN.....................      8.500       2.700      18.000       3.900       1.400      18.000       6.200       1.000
          MAX.....................     18.500      44.000     210.000      11.600      48.000     380.000       7.900     370.000
# OF EVENTS.......................          5           5           5           5           5           5           4           5
TOTAL FLOW VOLUME(INCH)...........      0.155       0.155       0.155       0.155       0.155       0.155       0.119       0.155
TOTAL MASS LOAD(LBS)..............  *********   *********   *********      54.100      33.200     232.000   *********     378.000
CONCENTRATION(LBS/AC-IN)..........  *********   *********   *********       2.320       1.430       9.980   *********      16.200

                                         530         546         552         610         615         625         630         665
                                     RESIDUE     RESIDUE      GREASE       NH3-N       NO2-N    TOT KJEL     NO2&NO3      PHOS-P
                                    TOT NFLT    SETTLBLE     HEX SOL       TOTAL       TOTAL           N     N-TOTAL       P-WET
                                        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L        MG/L
                                     --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................     61.300      45.800       9.470       0.118       0.017       0.856       0.377       0.325
STANDARD DEVIATION................      9.900      12.900       2.980       0.084       0.009       0.634       0.167       0.027
COEF. OF VARIATION................      0.162       0.281       0.314       0.714       0.503       0.740       0.443       0.082
PARAMETER RANGE
          MIN.....................      4.000       0.100       0.200       0.020       0.010       0.220       0.050       0.160
          MAX.....................    316.000     390.000      52.000       1.100       0.190       5.800       2.400       0.590
# OF EVENTS.......................          5           5           5           5           5           5           5           2
TOTAL FLOW VOLUME(INCH)...........      0.155       0.155       0.155       0.155       0.155       0.155       0.155       0.025
TOTAL MASS LOAD(LBS)..............    323.000     242.000      50.000       0.621       0.091       4.520       1.990       0.280
CONCENTRATION(LBS/AC-IN)..........     13.900      10.400       2.150       0.027       0.004       0.194       0.085       0.074

                                         669         940         945        1002        1027        1034        1042        1045
                                      PHOS-T    CHLORIDE     SULFATE     ARSENIC     CADMIUM    CHROMIUM      COPPER        IRON
                                       HYDRO          CL         SO4      AS.TOT      CD.TOT      CR.TOT      CU.TOT       TOTAL
                                      MG/L P        MG/L        MG/L        UG/L        UG/L        UG/L        UG/L        UG/L
                                     --------    --------    --------    --------    --------    --------    --------    --------
MEAN..............................      0.523       3.050       5.370      50.600       4.410       9.870      81.400     289.000
STANDARD DEVIATION................      1.040       2.920       2.800       1.250       0.349       0.329      92.400     172.000
COEF. OF VARIATION................      1.993       0.957       0.521       0.025       0.079       0.033       1.135       0.595
PARAMETER RANGE
          MIN.....................      0.120       0.900       1.000      49.000       3.900       9.000       9.000      60.000
          MAX.....................      9.000      60.000      34.000      60.000       8.000     210.000     350.000    1900.000
# OF EVENTS.......................          5           5           5           3           5           5           5           5
TOTAL FLOW VOLUME(INCH)...........      0.155       0.155       0.147       0.056       0.155       0.155       0.155       0.155
TOTAL MASS LOAD(LBS)..............      2.760      16.100      26.900       0.097       0.023       0.052       0.430       1.530
CONCENTRATION(LBS/AC-IN)..........      0.119       0.692       1.220       0.012       0.001       0.002       0.018       0.066
```

*** TABLE X -119. ***

```
                                                 ********************************
                                                 *     STATISTICAL SUMMARY      *
                                                 ********************************
                                                 *       CATCHMENT FILE : 86    *
                                   **************************************************************
                                   * SEATTLE, WASHINGTON. LAKE HILLS(LHS).             (WA 1 5) *
                                   **************************************************************
                                   *    STORM SEWERED AREA         CATCHMENT AREA  150.00 ACRES *
                                   **************************************************************

                                     1051        1092        31501      31616       70507
                                     LEAD         ZINC      TOT COLI   FEC COLI     PHOS-T
                                    PB.TOT       ZN.TOT     MFIMENDO   MFM-FCBR     ORTHO
                                     UG/L        UG/L       LN/100ML   LN/100ML     MG/L P
                                    --------    --------    --------   --------    --------
MEAN...........................      209.000      62.500       9.380       8.200      0.076
STANDARD DEVIATION.............       93.100      51.800       9.410       8.350      0.063
COEF. OF VARIATION.............        0.444       0.829       1.027       1.160      0.829
PARAMETER RANGE
          MIN..................       90.000      10.000       4.610       3.910      0.010
          MAX..................     2500.000     490.000      11.300      10.800      0.470
# OF EVENTS....................            5           5           5           5          4
TOTAL FLOW VOLUME(INCH)........        0.155       0.155       0.155       0.155      0.142
TOTAL MASS LOAD(LBS)...........        1.110       0.330      26.400      25.200      0.369
CONCENTRATION(LBS/AC-IN).......        0.048       0.014      23.200      22.000      0.017
```

*** TABLE X -119. ***

```
                         ******************************
                         *      SUMMARY OF EVENTS     *
                         ******************************
                         *      CATCHMENT FILE : 87   *
            ************************************************************
            * SEATTLE, WASHINGTON. HIGHLANDS(HL6).             (WA 1 6) *
            ************************************************************
            *    STORM SEWERED AREA        CATCHMENT AREA   85.00 ACRES *
            ************************************************************


                              RAINFALL                                                FLOW
                              --------                                                ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME   AVG    PEAK    BASIN DATE(START-END)    DURATION     VOLUME    RUNOFF    PEAK   DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)   RAIN   RAIN    LAG   YR,MON,D,HR,MIN    (HRS)        (INCH)    COEFF.    FLOW   DAYS
                                                   IN/HR  IN/HR   HRS                                                       CFS
-----  ----  ---------------    --------  ------   -----  -----   ----- ---------------    --------     ------    ------    ----   ----


  1    129     73/ 3/10  0:30     4.58    0.350   0.076   0.24     1.75  73/ 3/ 9 24: 0      8.00        0.037     0.106    2.80
               73/ 3/10  5: 5                                            73/ 3/10  8: 0

  2    129     73/ 3/16  8:35     1.58    0.041   0.026   0.04     0.67  73/ 3/16  7:30      4.75        0.028     0.684    0.77
               73/ 3/16 10:10                                            73/ 3/16 12:15

  3    129     73/ 6/ 6 12:45     2.42    0.049   0.020   0.04     1.67  73/ 6/ 6 12: 5      5.17        0.003     0.061    1.05
               73/ 6/ 6 15:10                                            73/ 6/ 6 17:15

  4    129     73/ 9/19  9:35     6.75    0.258   0.038   0.10     5.92  73/ 9/19  9:15      9.00        0.005     0.019    0.06
               73/ 9/19 16:20                                            73/ 9/19 18:15
```

*** TABLE X -120. ***

```
                                   ******************************
                                   *     STATISTICAL SUMMARY    *
                                   ******************************
                                   *     CATCHMENT FILE : 87    *
                        ****************************************************
                        * SEATTLE, WASHINGTON. HIGHLANDS(HL6).     (WA 1 6) *
                        ****************************************************
                        *   STORM SEWERED AREA     CATCHMENT AREA  85.00 ACRES *
                        ****************************************************

                                   10         70         94        300        310        340        400        515
                                 WATER      TURB     CNDUCTVY      DO         BOD        COD        PH       RESIDUE
                                 TEMP       JKSN      FIELD                  5 DAY    HI LEVEL            DISS-105
                                 CENT       JTU      MICROMHO     MG/L       MG/L       MG/L        SU      C MG/L
                               --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................    8.530     26.300    118.000     10.200      4.200     65.100      7.160     94.400
STANDARD DEVIATION.............    1.680     19.800     46.200      0.510      3.770     37.100      0.414     16.100
COEF. OF VARIATION.............    0.197      0.754      0.392      0.050      0.897      0.570      0.058      0.170
PARAMETER RANGE
          MIN..................    8.000      1.000     56.000      5.200      0.500      5.000      6.100      8.000
          MAX..................   14.800     57.000    970.000     11.700     33.500    220.000      7.900    210.000
# OF EVENTS....................        4          4          4          4          4          4          4          4
TOTAL FLOW VOLUME(INCH)........    0.059      0.059      0.059      0.059      0.059      0.059      0.059      0.059
TOTAL MASS LOAD(LBS)...........  *********  *********  *********     11.700      4.810     74.600  *********    108.000
CONCENTRATION(LBS/AC-IN).......  *********  *********  *********      2.310      0.953     14.800  *********     21.400

                                  530        546        552        610        615        625        630        669
                                RESIDUE    RESIDUE    GREASE     NH3-N      NO2-N    TOT KJEL   NO2&NO3    PHOS-T
                                TOT NFLT   SETTLBLE   HEX SOL    TOTAL      TOTAL       N       N-TOTAL    HYDRO
                                 MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L     MG/L P
                               --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................  110.000     72.400      9.540      0.084      0.016      1.370      0.984      0.360
STANDARD DEVIATION.............   71.400     57.600      6.370      0.033      0.004      0.768      0.256      0.200
COEF. OF VARIATION.............    0.652      0.795      0.668      0.396      0.284      0.560      0.260      0.554
PARAMETER RANGE
          MIN..................    4.000      0.100      0.600      0.010      0.010      0.220      0.200      0.080
          MAX..................  620.000    390.000     38.000      0.200      0.030      4.100      1.400      0.860
# OF EVENTS....................        4          4          4          4          4          4          4          4
TOTAL FLOW VOLUME(INCH)........    0.059      0.059      0.059      0.059      0.059      0.059      0.059      0.059
TOTAL MASS LOAD(LBS)...........  125.000     82.900     10.900      0.096      0.018      1.570      1.130      0.412
CONCENTRATION(LBS/AC-IN).......   24.800     16.400      2.160      0.019      0.004      0.311      0.223      0.082

                                  940        945       1002       1027       1034       1042       1045       1051
                                CHLORIDE   SULFATE    ARSENIC    CADMIUM    CHROMIUM   COPPER     IRON       LEAD
                                   CL        SO4      AS.TOT     CD.TOT     CR.TOT     CU.TOT     TOTAL     PB.TOT
                                 MG/L       MG/L       UG/L       UG/L       UG/L       UG/L       UG/L       UG/L
                               --------   --------   --------   --------   --------   --------   --------   --------
MEAN...........................    6.680     21.200     49.600      4.480      9.960    159.000    345.000    103.000
STANDARD DEVIATION.............    3.910      7.840      0.500      0.619      0.186     59.000    167.000     19.600
COEF. OF VARIATION.............    0.586      0.370      0.010      0.138      0.019      0.372      0.483      0.190
PARAMETER RANGE
          MIN..................    2.000      6.000     49.000      3.900      9.000      9.000     20.000      9.000
          MAX..................   15.000     36.000     50.000     10.000     10.000    350.000   3100.000    270.000
# OF EVENTS....................        4          4          2          4          4          3          4          4
TOTAL FLOW VOLUME(INCH)........    0.059      0.051      0.006      0.059      0.059      0.028      0.059      0.059
TOTAL MASS LOAD(LBS)...........    7.650     20.700      0.005      0.005      0.011      0.085      0.395      0.118
CONCENTRATION(LBS/AC-IN).......    1.510      4.800      0.011      0.001      0.002      0.036      0.078      0.023
```

*** TABLE X -121. ***

```
                                                    ********************************
                                                    *     STATISTICAL SUMMARY      *
                                                    ********************************
                                                    *      CATCHMENT FILE : 87     *
                                     ***************************************************************
                                     * SEATTLE, WASHINGTON. HIGHLANDS(HL6).               (WA 1 6) *
                                     ***************************************************************
                                     *    STORM SEWERED AREA         CATCHMENT AREA   85.00 ACRES *
                                     ***************************************************************


                                         1092        31501        31616        70507        71900
                                         ZINC      TOT COLI     FEC COLI      PHOS-T      MERCURY
                                        ZN.TOT     MFIMENDO     MFM-FCBR      ORTHO      HG.TOTAL
                                         UG/L      LN/100ML     LN/100ML      MG/L P       UG/L
                                       --------    --------     --------     --------    --------
MEAN.............................        43.700       8.020        7.350        0.078       0.251
STANDARD DEVIATION...............        28.000       8.820        8.150        0.031       0.065
COEF. OF VARIATION...............         0.640       2.218        2.214        0.398       0.260
PARAMETER RANGE
                MIN..............         9.000       4.700        3.300        0.030       0.200
                MAX..............       180.000      10.500        9.800        0.240       0.500
# OF EVENTS......................             4           4            3            4           4
TOTAL FLOW VOLUME(INCH)..........         0.059       0.059        0.028        0.059       0.059
TOTAL MASS LOAD(LBS).............         0.050      23.500       22.100        0.089       0.000
CONCENTRATION(LBS/AC-IN).........         0.010      21.900       21.200        0.018       0.000
```

*** TABLE X -121. ***

```
                              ******************************
                              *     SUMMARY OF EVENTS      *
                              ******************************
                              *     CATCHMENT FILE : 88    *
                    **************************************************
                    * SEATTLE, WASHINGTON. CENTRAL BUSINESS DISTRICT.   (WA 1 7) *
                    **************************************************
                    * COMBINED SEWERED AREA        CATCHMENT AREA   27.80 ACRES *
                    **************************************************


                        RAINFALL                                           FLOW
                        --------                                           ----

EVENT  RAIN  DATE(START-END)    DURATION  VOLUME  AVG   PEAK   BASIN DATE(START-END)    DURATION  VOLUME  RUNOFF  PEAK  DRY
       GAGE  YR,MON,D,HR,MIN     (HRS)    (INCH)  RAIN  RAIN   LAG   YR,MON,D,HR,MIN    (HRS)     (INCH)  COEFF.  FLOW  DAYS
                                                  IN/HR IN/HR  HRS                                                CFS
-----  ----  ---------------    --------  ------  ----  ----   ----- ---------------  --------   ------  ------  ----  ----


  1    129    73/ 3/10  0:25      3.42    0.281  0.082  0.20   0.75  73/ 3/10  0: 5     6.92     0.333   1.186   5.80
              73/ 3/10  3:50                                         73/ 3/10  7: 0

  2    129    73/ 3/16  8:30      1.92    0.051  0.026  0.05   1.25  73/ 3/16  7: 5     5.42     0.091   1.786   1.10
              73/ 3/16 10:25                                         73/ 3/16 12:30

  3    129    73/ 6/ 6 12:25      3.33    0.162  0.049  0.24   2.08  73/ 6/ 6 11:30     5.00     0.125   0.770   1.45
              73/ 6/ 6 15:45                                         73/ 6/ 6 16:30

  4    129    73/ 8/16 12:30      3.08    0.072  0.023  0.08   0.00  73/ 8/16 12:15     3.75     0.142   1.971   2.58
              73/ 8/16 15:35                                         73/ 8/16 16: 0

  5    129    73/ 9/19  9:20      7.17    0.253  0.035  0.24   6.25  73/ 9/19  9: 2     9.55     0.250   0.988   1.87
              73/ 9/19 16:30                                         73/ 9/19 18:35
```

*** TABLE X -122. ***

```
                                    *****************************************
                                    *        STATISTICAL SUMMARY            *
                                    *****************************************
                                    *        CATCHMENT FILE : 88            *
                       ************************************************************
                       * SEATTLE, WASHINGTON. CENTRAL BUSINESS DISTRICT.  (WA 1 7) *
                       ************************************************************
                       * COMBINED SEWERED AREA        CATCHMENT AREA   27.80 ACRES *
                       ************************************************************

                                         10         70         94        300        310        340        400        515
                                      WATER       TURB   CNDUCTVY         DO        BOD        COD         PH    RESIDUE
                                       TEMP       JKSN      FIELD                 5 DAY   HI LEVEL               DISS-105
                                       CENT        JTU   MICROMHO       MG/L       MG/L       MG/L         SU     C MG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN............................     17.500     43.700    167.000      7.670     64.300    176.000      6.490    150.000
STANDARD DEVIATION..............      1.700      6.630     86.900      2.340     37.700     67.900      0.755     47.600
COEF. OF VARIATION..............      0.097      0.152      0.521      0.305      0.585      0.386      0.116      0.317
PARAMETER RANGE
         MIN....................     11.200     10.000     25.000      1.800      9.000     31.000      3.900      1.000
         MAX....................     20.700    180.000    430.000     11.900    220.000    480.000      7.700   2300.000
# OF EVENTS.....................          4          5          5          5          5          5          5          5
TOTAL FLOW VOLUME(INCH).........      0.492      0.822      0.822      0.785      0.785      0.785      0.785      0.822
TOTAL MASS LOAD(LBS)............ ********** ********** **********     37.900    318.000    870.000 **********    778.000
CONCENTRATION(LBS/AC-IN)........ ********** ********** **********      1.740     14.600     39.900 **********     34.000

                                        530        546        552        610        615        625        630        669
                                    RESIDUE    RESIDUE     GREASE      NH3-N      NO2-N   TOT KJEL    NO2&NO3     PHOS-T
                                   TOT NFLT   SETTLBLE    HEX SOL      TOTAL      TOTAL          N    N-TOTAL      HYDRO
                                       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L       MG/L     MG/L P
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN............................    162.000    101.000     18.200      2.300      0.104      8.660      0.719      1.560
STANDARD DEVIATION..............     21.700     28.500      8.910      2.240      0.060      5.940      0.278      1.210
COEF. OF VARIATION..............      0.134      0.284      0.490      0.974      0.573      0.685      0.387      0.774
PARAMETER RANGE
         MIN....................      4.000      0.100      1.000      0.080      0.010      0.270      0.150      0.080
         MAX....................    724.000    570.000    140.000     18.000      0.300     31.000      2.100     15.200
# OF EVENTS.....................          5          5          5          5          5          5          5          5
TOTAL FLOW VOLUME(INCH).........      0.785      0.822      0.822      0.822      0.822      0.822      0.822      0.822
TOTAL MASS LOAD(LBS)............    800.000    521.000     94.100     11.900      0.540     44.900      3.720      8.070
CONCENTRATION(LBS/AC-IN)........     36.700     22.800      4.120      0.520      0.024      1.960      0.163      0.353

                                        940        945       1002       1027       1034       1042       1045       1051
                                   CHLORIDE    SULFATE    ARSENIC    CADMIUM   CHROMIUM     COPPER       IRON       LEAD
                                         CL        SO4     AS.TOT     CD.TOT     CR.TOT     CU.TOT      TOTAL     PB.TOT
                                       MG/L       MG/L       UG/L       UG/L       UG/L       UG/L       UG/L       UG/L
                                   --------   --------   --------   --------   --------   --------   --------   --------
MEAN............................     65.700     20.400     49.800     27.400    598.000    353.000   1470.000    299.000
STANDARD DEVIATION..............    163.000     11.300      0.543     47.300    693.000    285.000    965.000    163.000
COEF. OF VARIATION..............      2.475      0.554      0.011      1.724      1.160      0.808      0.656      0.545
PARAMETER RANGE
         MIN....................      4.000      2.000     49.000      3.900     10.000     20.000    110.000     90.000
         MAX....................   3000.000     55.000     60.000   1600.000   4200.000   4200.000  13000.000   1800.000
# OF EVENTS.....................          5          5          3          5          5          5          5          5
TOTAL FLOW VOLUME(INCH).........      0.785      0.813      0.439      0.785      0.785      0.785      0.822      0.785
TOTAL MASS LOAD(LBS)............    325.000    104.000      0.138      0.136      2.950      1.740      7.610      1.480
CONCENTRATION(LBS/AC-IN)........     14.900      4.620      0.011      0.006      0.135      0.080      0.333      0.068
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*** TABLE X -123. ***

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                                   ********************************
                                   *      STATISTICAL SUMMARY     *
                                   ********************************
                                   *      CATCHMENT FILE : 88     *
                         ************************************************************
                         * SEATTLE, WASHINGTON. CENTRAL BUSINESS DISTRICT.   (WA 1 7) *
                         ************************************************************
                         * COMBINED SEWERED AREA        CATCHMENT AREA   27.80 ACRES *
                         ************************************************************

                                 10         70          94         300        310         340        400        515
                               WATER       TURB      CNDUCTVY      DO         BOD         COD        PH       RESIDUE
                                TEMP       JKSN       FIELD                  5 DAY     HI LEVEL             DISS-105
                                CENT        JTU      MICROMHO     MG/L       MG/L        MG/L        SU      C MG/L
                              --------   --------   --------   --------   --------    --------   --------   --------
MEAN.......................     17.500     43.700    167.000      7.670     64.300     176.000      6.490    150.000
STANDARD DEVIATION.........      1.700      6.630     86.900      2.340     37.700      67.900      0.755     47.600
COEF. OF VARIATION.........      0.097      0.152      0.521      0.305      0.585       0.386      0.116      0.317
PARAMETER RANGE
        MIN................     11.200     10.000     25.000      1.800      9.000      31.000      3.900      1.000
        MAX................     20.700    180.000    430.000     11.900    220.000     480.000      7.700   2300.000
# OF EVENTS................          4          5          5          5          5           5          5          5
TOTAL FLOW VOLUME(INCH)....      0.492      0.822      0.822      0.785      0.785       0.785      0.785      0.822
TOTAL MASS LOAD(LBS).......  *********  *********  *********     37.900    318.000     870.000  *********    778.000
CONCENTRATION(LBS/AC-IN)...  *********  *********  *********      1.740     14.600      39.900  *********     34.000

                                530        546        552        610        615         625        630        669
                              RESIDUE    RESIDUE     GREASE     NH3-N      NO2-N     TOT KJEL    NO2&NO3    PHOS-T
                              TOT NFLT   SETTLBLE    HEX SOL    TOTAL      TOTAL         N       N-TOTAL     HYDRO
                                MG/L       MG/L       MG/L       MG/L       MG/L        MG/L       MG/L      MG/L P
                              --------   --------   --------   --------   --------    --------   --------   --------
MEAN.......................    162.000    101.000     18.200      2.300      0.104       8.660      0.719      1.560
STANDARD DEVIATION.........     21.700     28.500      8.910      2.240      0.060       5.940      0.278      1.210
COEF. OF VARIATION.........      0.134      0.284      0.490      0.974      0.573       0.685      0.387      0.774
PARAMETER RANGE
        MIN................      4.000      0.100      1.000      0.080      0.010       0.270      0.150      0.080
        MAX................    724.000    570.000    140.000     18.000      0.300      31.000      2.100     15.200
# OF EVENTS................          5          5          5          5          5           5          5          5
TOTAL FLOW VOLUME(INCH)....      0.785      0.822      0.822      0.822      0.822       0.822      0.822      0.822
TOTAL MASS LOAD(LBS).......    800.000    521.000     94.100     11.900      0.540      44.900      3.720      8.070
CONCENTRATION(LBS/AC-IN)...     36.700     22.800      4.120      0.520      0.024       1.960      0.163      0.353

                                940        945        1002       1027       1034        1042       1045       1051
                              CHLORIDE   SULFATE    ARSENIC    CADMIUM    CHROMIUM     COPPER      IRON       LEAD
                                 CL        SO4      AS.TOT     CD.TOT      CR.TOT      CU.TOT     TOTAL      PB.TOT
                                MG/L       MG/L       UG/L       UG/L       UG/L        UG/L       UG/L       UG/L
                              --------   --------   --------   --------   --------    --------   --------   --------
MEAN.......................     65.700     20.400     49.800     27.400    598.000     353.000   1470.000    299.000
STANDARD DEVIATION.........    163.000     11.300      0.543     47.300    693.000     285.000    965.000    163.000
COEF. OF VARIATION.........      2.475      0.554      0.011      1.724      1.160       0.808      0.656      0.545
PARAMETER RANGE
        MIN................      4.000      2.000     49.000      3.900     10.000      20.000    110.000     90.000
        MAX................   3000.000     55.000     60.000   1600.000   4200.000    4200.000  13000.000   1800.000
# OF EVENTS................          5          5          3          5          5           5          5          5
TOTAL FLOW VOLUME(INCH)....      0.785      0.813      0.439      0.785      0.785       0.785      0.822      0.785
TOTAL MASS LOAD(LBS).......    325.000    104.000      0.138      0.136      2.950       1.740      7.610      1.480
CONCENTRATION(LBS/AC-IN)...     14.900      4.620      0.011      0.006      0.135       0.080      0.333      0.068
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*** TABLE X -123. ***

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                                              *********************************
                                              *      STATISTICAL SUMMARY      *
                                              *********************************
                                              *       CATCHMENT FILE : 88     *
                               ***************************************************************
                               * SEATTLE, WASHINGTON. CENTRAL BUSINESS DISTRICT.   (WA 1 7) *
                               ***************************************************************
                               * COMBINED SEWERED AREA          CATCHMENT AREA   27.80 ACRES *
                               ***************************************************************


                                    1092        31501        31616        70507        71900
                                    ZINC       TOT COLI     FEC COLI      PHOS-T      MERCURY
                                   ZN.TOT      MFIMENDO     MFM-FCBR      ORTHO       HG.TOTAL
                                    UG/L       LN/100ML     LN/100ML      MG/L P        UG/L
                                  --------     --------     --------     --------     --------
MEAN...............................  931.000       10.400       10.000        0.456        0.327
STANDARD DEVIATION.................  862.000        9.450        9.360        0.490        0.110
COEF. OF VARIATION.................    0.926        0.377        0.520        1.075        0.336
PARAMETER RANGE
              MIN..................  150.000        5.140        2.080        0.010        0.200
              MAX.................. 5300.000       11.400       11.400        3.200        1.800
# OF EVENTS........................        5            5            5            5            5
TOTAL FLOW VOLUME(INCH)............    0.785        0.816        0.822        0.822        0.822
TOTAL MASS LOAD(LBS)...............    4.600       27.400       27.000        2.360        0.002
CONCENTRATION(LBS/AC-IN)...........    0.211       24.300       23.900        0.103        0.000
```

*** TABLE X -123. ***

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                    ******************************
                    *      SUMMARY OF EVENTS     *
                    ******************************
                    *    CATCHMENT FILE : 89     *
*************************************************************
* RACINE, WISCONSIN.   SITE 1.                    (WI 1 1) *
*************************************************************
* COMBINED SEWERED AREA        CATCHMENT AREA  829.00 ACRES *
*************************************************************
```

		RAINFALL						FLOW					
EVENT	RAIN GAGE	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	AVG RAIN IN/HR	PEAK RAIN IN/HR	BASIN LAG HRS	DATE(START-END) YR,MON,D,HR,MIN	DURATION (HRS)	VOLUME (INCH)	RUNOFF COEFF.	PEAK FLOW CFS	DRY DAYS
1	129	73/ 7/20 13:55 73/ 7/20 19:40	5.75	3.321	0.578	1.06	1.42	73/ 7/20 13:55 73/ 7/20 19:30	5.59	0.231	0.070	65.60	
2	129	73/ 9/24 22:15 73/ 9/25 3:10	4.91	0.621	0.126	0.60	5.25	73/ 9/24 23: 0 73/ 9/25 4:50	5.83	0.084	0.135	21.95	
3	129	73/11/14 16:20 73/11/14 22:55	6.58	0.636	0.097	0.30	3.00	73/11/14 16:50 73/11/14 24: 0	7.17	0.127	0.199	25.60	
4	129	74/ 4/18 14: 0 74/ 4/18 17: 0	3.00	0.258	0.086	0.18	3.50	74/ 4/18 15: 0 74/ 4/18 18:30	3.50	0.029	0.112	17.55	
5	129	74/ 4/28 22:30 74/ 4/29 3: 0	4.50	1.447	0.321	0.78	3.50	74/ 4/28 23:50 74/ 4/29 8: 0	8.17	0.221	0.153	41.05	
6	129	74/ 5/ 5 8:50 74/ 5/ 5 10:15	1.42	0.114	0.081	0.12	2.00	74/ 5/ 5 10:15 74/ 5/ 5 11:30	1.25	0.005	0.045	7.25	
7	129	74/ 5/13 12: 0 74/ 5/13 12:55	0.92	0.236	0.257	0.60	1.17	74/ 5/13 12:30 74/ 5/13 14:30	2.00	0.025	0.108	20.05	
8	129	74/ 6/ 6 16:50 74/ 6/ 6 22: 5	5.25	0.680	0.130	0.72	0.83	74/ 6/ 6 17:10 74/ 6/ 6 24: 0	6.83	0.093	0.137	26.55	
9	129	74/ 8/16 12:30 74/ 8/16 15: 5	2.58	0.249	0.096	0.72	6.00	74/ 8/16 13: 0 74/ 8/16 20:10	7.16	0.051	0.205	18.25	

*** TABLE X -124. ***

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                                                    ***********************************
                                                    *       STATISTICAL SUMMARY       *
                                                    ***********************************
                                                    *       CATCHMENT FILE : 89       *
                                        ****************************************************
                                        * RACINE, WISCONSIN.   SITE 1.           (VI 1 1) *
                                        ****************************************************
                                        * COMBINED SEWERED AREA      CATCHMENT AREA  829.00 ACRES *
                                        ****************************************************

                                          310         530        31501
                                          BOD       RESIDUE     TOT COLI
                                         5 DAY      TOT NFLT    MFIMENDO
                                          MG/L        MG/L      LN/100ML
                                        --------    --------    --------
MEAN..............................
STANDARD DEVIATION...............        89.600     181.000      16.500
COEF. OF VARIATION...............        17.800     137.000      16.800
PARAMETER RANGE                           0.199       0.758       1.310
             MIN..................
             MAX..................       29.000       7.000       7.600
# OF EVENTS.......................      238.000     725.000      19.300
TOTAL FLOW VOLUME(INCH)..........             7           7           6
TOTAL MASS LOAD(LBS).............         0.346       0.346       0.254
CONCENTRATION(LBS/AC-IN)........       5820.000   11800.000      35.700
                                         20.300      41.100      30.400
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*** TABLE X -125. ***

SECTION XI

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